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STEEL

The Magazine of Metalworking and Metalproducing

CONTENTS — PAGE 43

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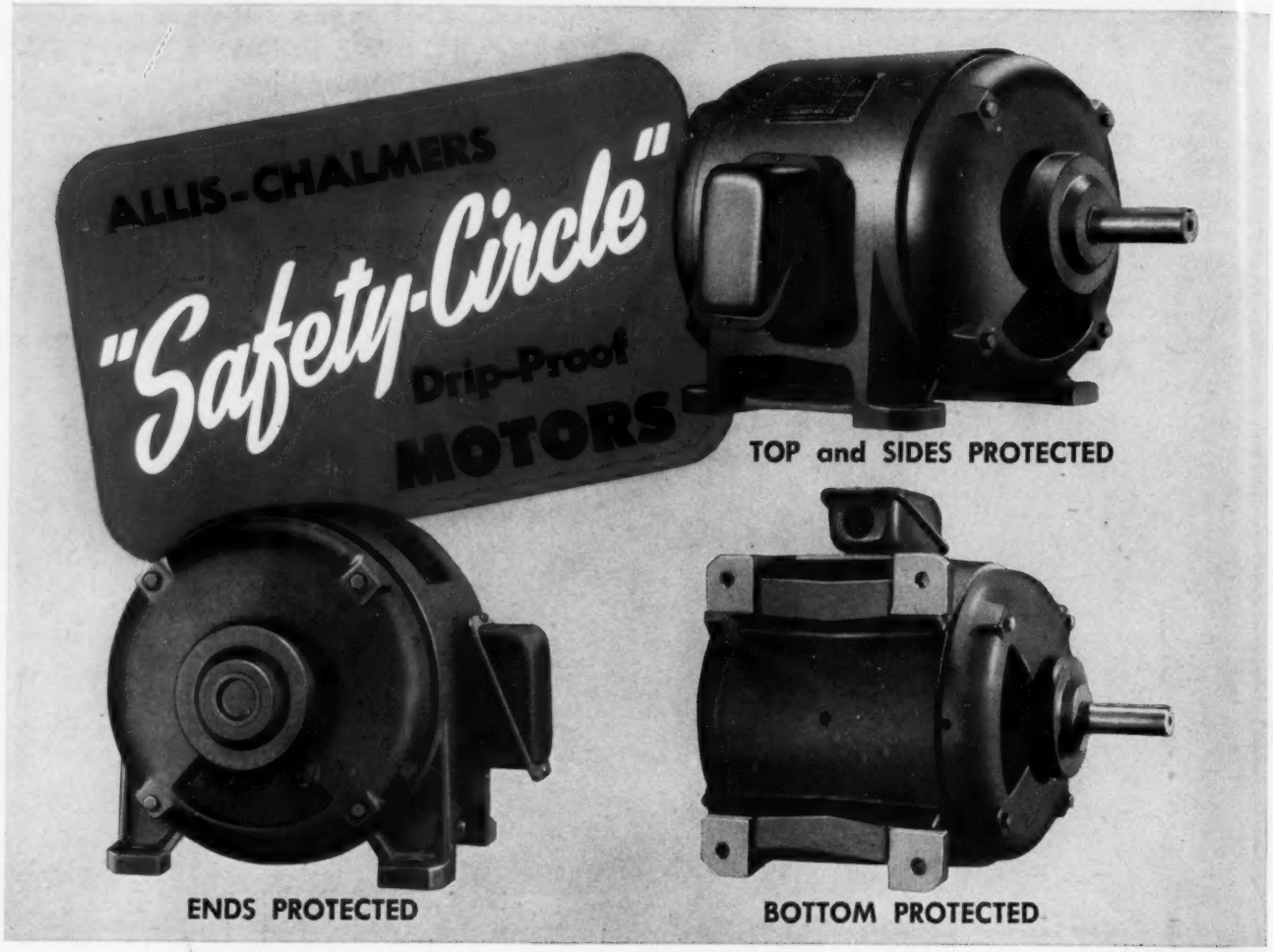

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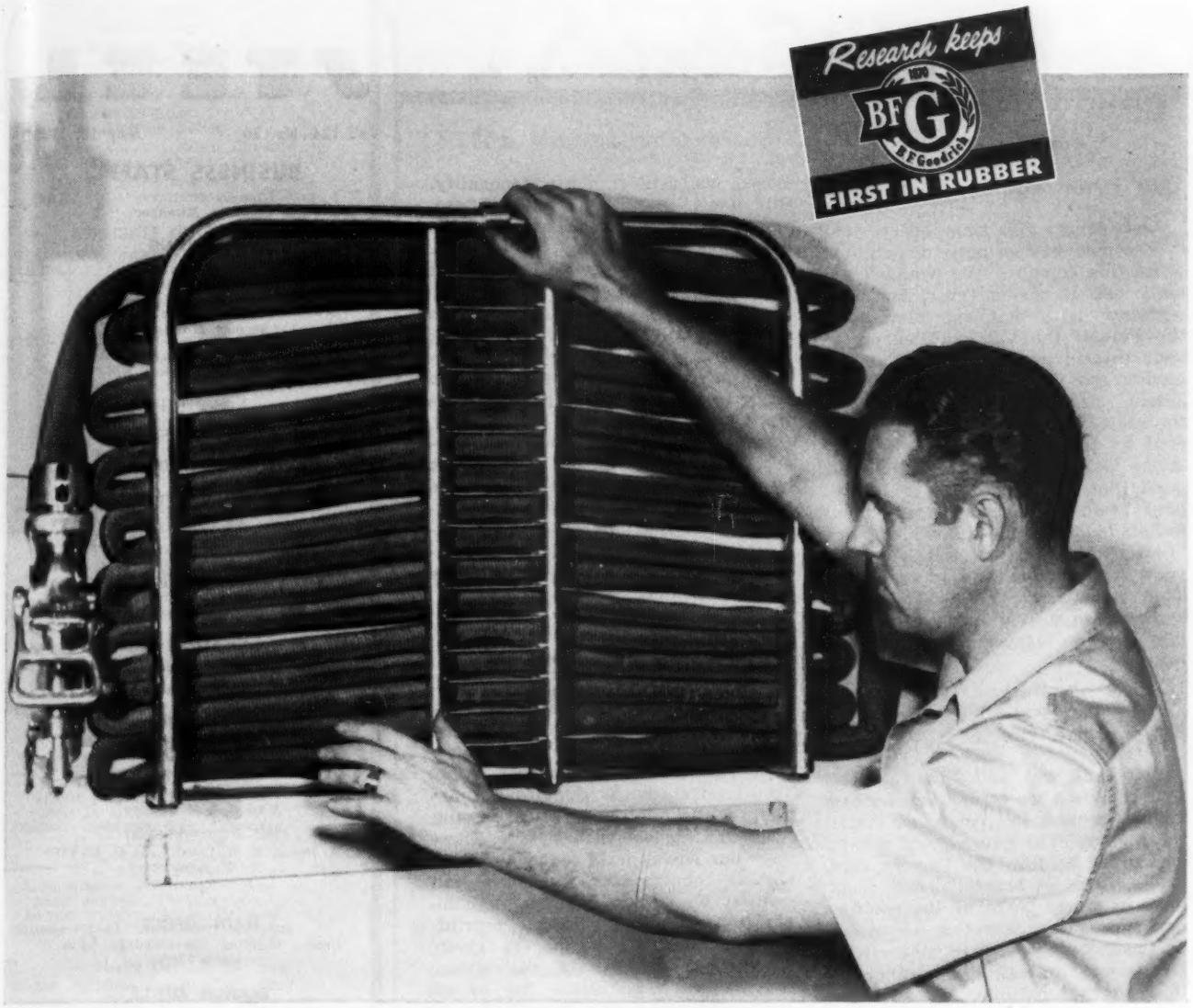

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Behind the Scenes...

That Fever Again

Just about this time every year it becomes increasingly difficult to write this column. We wouldn't exactly call it spring fever, but it is certainly true that the view from the Penton Building isn't exactly a spur toward greater activity. We're having our first heat wave of the season. Right across the street there's a little park with trees covered by fresh green leaves, and the lawns look shady and cool. Just beyond that little park lies the Cleveland Stadium, where a tremendous Indian holds a big sign which says, "Ball Game Today." And down beyond that, shimmering in the afternoon sunshine, is Lake Erie, where we can see a few small craft sailing, a few fishermen trying their luck.

Better Than Worse

You (and we) will have to admit that there's a lot of uncertainty talk going around in economic circles these days. The government is talking about holding the line on farm prices, news of layoffs makes headlines in many parts of the country, and there's a rumor that ulcers are on the increase in advertising circles. It was most refreshing the other day to read that William Blees, vice-president of Avco Manufacturing is looking the other way. He was quoted by the press last week as having said that most people seem to be scared because business is only about 40% better than normal!

Noble Roman

Elsewhere in this issue you'll find a formal obit on W. T. Mossman. It isn't the practice of this column to horn in on the editors' duties along that line, but we're making a small exception in this case, because Bill Mossman, in his forty years at Jones & Laughlin was an outstanding friend of all business papers which had anything to do with the steel industry. He was one of the first men to break down the wall of silence which for many years covered the doings of the industry, and his sage counsel was sought across the years by many an editor in need of inside information on steel. The J & L editors' party which for a number of years was a high spot of the Metal Show was Bill's idea. His office in Pittsburgh, where the door was never closed, was typical of his personality. Bill didn't believe in private offices, and he never had one. He and his associates shared one large room, and when he was there, he was "at home" to all comers. Almost any time of the day you would find him in conversation with newspaper men, editors, reporters, advertising salesmen—anyone who chanced to drop in became one of the group, while Bill would sit back with hat on head, feet on the desk, and act as moderator for discussion on the current topic whether it was a strike in the mill, a multi-million dollar plant expansion project, or just a minor incident in the day's work. His company, the steel industry, and the press will miss him.

Half Century Ago

Fifty years ago our issue was devoted mainly to the fourth annual convention of the American Foundrymens Association, held in Pittsburgh. The report on the fifty-fourth annual convention, held at St. Louis, you'll find in last week's issue. These days our coverage is somewhat sketchy as compared to that of a half century back. The 1899 coverage included not only a complete reprinting of some of the papers given, summaries of some of the others, but also a registration list of all those attending and their company connections! Times, and societies have changed.

Puzzle Corner

According to the engineers of Page Steel & Wire Division, who sent in the problem of the rowboat and the fisherman, the stream was flowing three miles per hour, and the man can row any speed he feels like, as it will make no difference. Write to V. H. Godfrey at Monessen, Pa., where the plant is located, if you want proof. The girls in recent weeks seem to be both touchy about their ages and good puzzle subjects, so here's another one. Alice is as old as Betty and Christine together. Last year, Betty was twice as old as Christine. Two years hence, Alice will be twice as old as Christine. What are the ages of the three girls?

Shrdlu

(Editorial Index—page 43)

STEEL

Vol. 124—No. 20 May 16, 1949

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Business Staff on Page 4

NEXT WEEK . . .

Resistance Weld Failures Minimized by Test Method

Efficient Handling Methods Can Cut Production Costs—IV

Production of Plates—I

New Alloy, Stainless Strip Mill At Crucible's Midland Plant

STEEL

The Magazine of Metalworking and Metalproducing

VOL. 124, NO. 20 MAY 16, 1949

NEWS

★ As the Editor Views the News 45
★ News Summary 49
Another Year of Strikes? 51
Tools Basic in Economy 51
Steel Export Curbs Lifted 53
Metalworking Earnings Decline During 1949 First Quarter 54
Congressional Economic Committee's Viewpoints Far Apart 54
Buyers' Market Normal, Sheet Metal Distributors Told 55
Cleveland Exposition Points Up Coal Mining Advances 56
Talks Hint Revival of European Steel Cartel 57
Addresses Listed of Foreign Purchasing Missions 57
★ Windows of Washington 58
Colorado Fuel & Iron Expands 61
★ Calendar of Meetings 63
★ Mirrors of Motordom 65
Harnischfeger Expands Service Facilities in East 68
★ Briefs 69
★ The Business Trend 70
★ Men of Industry 72
★ Obituaries 75
★ Construction and Enterprise 158

TECHNICAL

★ Engineering News at a Glance 79
Spectrographic Power Source for Metallurgical Laboratories 80
Rubber Bonded to Metal Rapidly Becoming a "Production Tool" 82
Efficient Handling Methods Can Cut Production Costs—III 86
Roll Machining Time Cut by Template Controlled Lathe 96
Mill Rolls Stainless Rods at 2800 Feet Per Minute 98
★ Progress in Steelmaking—Production of Metallurgical Coke—III 102
★ New Products and Equipment 119
★ Helpful Literature 131

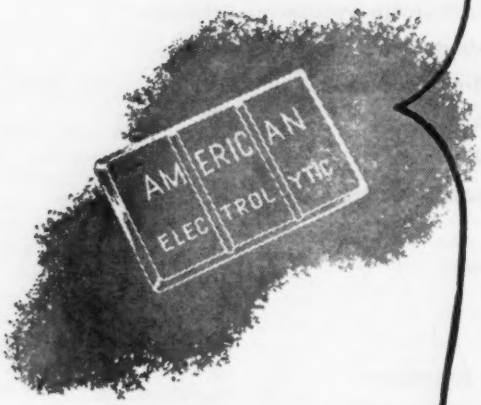
MARKETS

★ Market Summary 133
★ Market Prices and Composites 134
Copper and Zinc Prices Decline 138

★ *Advertising Index* 164

Editorial Index available semiannually; STEEL also is indexed regularly by Engineering Index Inc., 29 West 39th St., New York 18

★ Denotes Regular Features.



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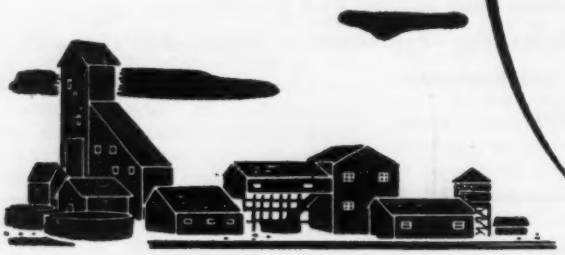

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The Profit Myth

Speaking at the spring meeting of the National Machine Tool Builders' Association, William J. Kelly, president of the Machinery & Allied Products Institute, declared that technological advancement and high employment in America are threatened by the myth of high corporate profits fostered by government and labor union economists.

In support of this charge, he cited results of an analysis of inflation and postwar profits just completed by the institute. For instance, the study showed that whereas the average of corporate profits in ten "representative good years" from 1909 to 1948 was 9 per cent of national income and 6 per cent of sales, in not one of the postwar years 1946 to 1948 did they reach this average. Also the study showed that postwar corporate profits, corrected for rising inventory costs and rising cost of equipment replacement, were lower in relation to national income and sales than in any previous year of peacetime production and high employment.

The fact that corporate profits are not as high as they seem to be should have an important bearing on present day policies. Unfortunately, much of the current thinking in government circles as to national policy is predicated on the false belief that corporate profits are excessive. Likewise, much of the strategy behind the demands by labor unions for higher wages and liberal social security benefits is based upon the myth that 1948 and first quarter of 1949 profits of industry are exorbitant.

Anyone who takes the pains to study the low volume of risk capital now available or who realizes the high proportion of earnings which industry must retain for the purchase of production facilities must know that current profits are not adequate under present conditions.

The pity is that the persons chiefly responsible for creating and fostering the myth of excessive profits do not understand that they are working against the real interests of their constituents. The government economists do not realize that pursuit of their fallacious thinking will cause a lower standard of living for the people, nor do the labor union economists realize that their policies will lead to more unemployment.

What the nation needs is a return to basic economic truths, uncolored by political or other wishful thinking.

* * *

AIDS FOR COAL MINING: Anyone who had the good fortune to attend the 1949 coal convention and exposition of the American Mining Congress in Cleveland last week must have been strongly impressed by the array of mechanized equipment which now is available to coal operators.

The show was replete with mechanical aids designed to lighten labor underground or in strip mining. Equipment for the former is noteworthy for its compactness and flexibility; that for the latter for its brute strength and great capacity. As one viewed these mechanical marvels, one could readily understand why output per man in American coal operations exceeds that in other nations by large margins. Also the display helps to support the estimates that not more than 3 per cent of the production of American mines is cut by hand and that at least 70 per cent is machine-loaded.

However, in many coal mines in other countries, and to some extent in the United States,

(OVER)

thickness of seam and other conditions are not such as to permit the use of the super machines displayed at the Cleveland show. One wonders whether progress in mechanization in mining operations eventually will follow the pattern of mechanization in agriculture. First came combines and mechanical aids for giant farms. Later came the power tools for medium and small-sized farms. Perhaps the next step in the mechanization of mining will be units for mine operations of modest size. —p. 56

* * *

THEY LACK EXPERIENCE: At this writing the Ford strike remains unsettled and the inactivity of Ford plants is causing thousands of suppliers to curtail their operations. The situation revives again the old question of how labor and management can settle their disputes without injuring innocent bystanders.

Theoretically the right to strike is a weapon which a mature, successful labor union would like to use sparingly, if at all. In the Ford case, the highest union officials did not want to strike, but when the local acted, the national leaders felt they had to acquiesce. Here one sees the conflict between the autonomy of locals and unity or discipline of the entire union organization.

Under the present national setup on labor relations the only hope of achieving common sense restraint against unwarranted strikes must come from experience on the part of union members and leaders. It is doubtful whether an older union would have acted as precipitously over a minor grievance as did the local leaders at River Rouge. —pp. 51, 65

* * *

CONTOURING ROLL LATHE: Roll turning, which has not changed much in many years, now may be on the verge of a revolutionary advance. Combining improvements in carbide cutting tools with refinements in electrical contouring controls, engineers of Monarch Machine Tool Co. have developed a roll turning contouring lathe which can reduce by from 35 to 85 per cent the present machining time, depending upon the type of roll machined.

One lathe has been shipped to an eastern steel company, another will be shipped to a midwest company in a few days and six others are on order. The Monarch company expects that 30 or more of the new lathes will be in service before the end of the year.

The use of template-controlled single point carbide tools instead of the conventional form tools is a logical outcome of contour turning developments in other fields of machining.

—pp. 52, 96

* * *

NEED BETTER HIGHWAYS: One of the big problems of nation, state, county and city is providing adequate facilities for highway transportation. In 1948 about $1569 million was spent on highway construction, yet experts say this is far below the sum needed annually to satisfy urgent needs. They estimate that $47 billion must be spent over a ten-year period if the nation is to keep abreast of rapidly mounting requirements.

Recent studies show that 49 per cent of 1,172,785 miles of highways investigated are deficient. These deficiencies include 55 per cent of state highway mileage, 49 per cent of county and local mileage and 41 per cent of city streets.

There are two redeeming features of highway construction which do not apply to some other public expenditures. One is that money wisely spent on highways nets a tangible return in reduced transportation costs. The other is that highway construction is an ideal stabilizer when other business lags. —p. 62

* * *

INGOT RATE DECLINING: Last week the rate of steel ingot operations receded slightly to 95.5 per cent of capacity. This is the lowest point touched thus far this year. It is only six points below the peak attained in mid-March.

While an operating rate of 95 per cent or more always has been considered good, and perhaps excellent, there are growing evidences that this level of output cannot be maintained long. Buyers are displaying an unusual degree of caution in ordering for forward needs. This is attributed to uncertainty as to prices, concern over possible labor trouble, desire to work off inventories and sluggishness in the sales of durable goods at the retail level.

Therefore, although some products such as cold-rolled and galvanized sheets still are in tight supply, present indications point to a continued easing of the steel ingot rate to progressively lower levels. —p. 133

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

RED LIGHT— How a single large strike fans out to decelerate the economy again is being demonstrated—this time by the Ford work stoppage (pp. 51, 65). Stop orders last week began affecting operations of 3500 major suppliers, resulting in loss of $4 million in business daily, and causing unemployment or curtailed work-weeks for thousands of workers not connected with the Ford organization. Meanwhile, strike fever appears to be increasing and numerous stoppages are ascribed to trivial "grievances." Union strategy in permitting these strikes on the eve of negotiations on labor's 1949 economic demands is difficult to understand.

BIG SPENDING CONTINUES— Current talk about government economy is not likely to bring any substantial reductions in the federal budget (p. 58). Even sincerely economy-minded congressmen are finding cutting the budget difficult. Three-fourths of expenditures are going to pay for past wars and military preparedness. A large chunk of the remainder goes to social welfare or for projects demanded by constituents. The size of these expenditures overshadows those which can be trimmed.

MINING MECHANIZATION—Persons concerned over the future of America's coal mining industry would have been encouraged had they attended last week's coal convention and exposition at Cleveland (p. 56). There were demonstrated the reasons why United States mining industry ranks head and shoulders above that of any other country. On display were the products of American inventiveness and ingenuity, devices that permit 97 per cent of all coal mined to be machine-cut and 70 per cent to be machine-loaded.

METALWORKING EARNINGS— Net profits of 50 representative metalworking companies (p. 54) dropped 26.5 per cent in the first quarter of 1949, compared with the fourth quarter of 1948. Thirty-nine of the 50 reported declines in earnings in the March quarter and five reported net losses.

EXPANSION— Colorado Fuel & Iron Corp. expects to have its new 27-stand continuous rod mill in operation before Oct. 1, as part of the western company's postwar expansion and modernization program (p. 61). Additional wire drawing and fabricating facilities have been installed to raise wire capacity to 180,000 tons annually.

REVIVE CARTELS?— Rising European steel production and return of a buyers' market have revived discussion of re-establishing the steel cartel in Europe (p. 57). Discussions have been held by Belgian and Luxemburgian steelmakers, and some sentiment in favor of such control are in evidence in France and Germany . . . Sharp increases are being made in western Germany's iron and steel production . . . Bill to nationalize Britain's steel industry has been approved by the House of Commons.

FOREIGN BUYERS— Names, addresses and functions of principal foreign purchasing missions operating under ECA-financed programs are listed (p. 57) to aid American metalworking companies seeking export business.

HERE AND THERE IN INDUSTRY—A new strip mill will be constructed in Australia (p. 56), with United Engineering & Foundry Co. supplying the know-how and a portion of the equipment . . . Steel ingot production (p. 52) in April, at 7,783,807 net tons, established a new record for that month although below the alltime record output of March . . . Expenditure of $47 billion over the next decade for highway work will be required to meet the country's needs (p. 62), according to the American Road Builders Association . . . Attention is being given to waste disposal (p. 66) by the big auto companies . . . Harnischfeger Corp. has opened a new warehouse and office in Teterboro, N. J. (p. 68) . . . Steel exports (p. 53) continued to drop in February. Additional government controls on foreign shipments have been lifted . . . Mine operators who activated marginal pits to obtain badly needed manganese during the war only to have the government raise the minimum acceptable manganese content to shut them out of the market may be compensated for their losses (p. 60).

Engineering News, p. 79 *Market Summary, p. 133*

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STEEL
A PENTON PUBLICATION

Another Year of Strikes?

Walkouts for trivial grievances suggest labor unrest is contagious. Premature stoppages seen weakening labor's position in negotiations on wage and social security demands

WILL the summer of 1949 see a recurrence of strikes such as plagued industry in 1946? Will present recessionary tendencies be accelerated by mass walkouts by organized labor, with resultant lost production, lost wages and lost purchasing power?

These questions were being pondered last week as effects of the Ford Rouge strike (p. 65) fanned out to affect hundreds of suppliers and thousands of workers, as the United Steelworkers polished up demands for increased wages and social security benefits estimated to total 30 cents an hour, and as labor unrest grew in diverse metalworking plants over management's insistence on work standards.

While no definite evidence of future widespread shutdowns has developed as yet, some observers are predicting more labor trouble than industry has experienced in the past two years. Mass work stoppages, they contend, could do much to decelerate the national economy.

Ford Strike May Affect 250,000—Stop orders to more than 3500 suppliers of Ford Motor Co. became effective last week and many of these were forced to furlough workers or to cut hours. Should the strike be prolonged, an estimated 250,000 workers in suppliers' plants throughout the country may be affected. This does not take into consideration the 72,000 Ford dealers and their 100,000 employees.

These figures illustrate the huge secondary losses resulting from strikes in this country's complicated economy. The same fanning out of effects has been witnessed before in coal strikes, steel strikes and stoppages in metalworking plants.

Strike Contagion—Industrial relations men believe that the walkout fever, recently in evidence in the automotive and electrical fields, may become contagious. Strikes currently are being called for what appear to be flimsy reasons. Grievances run all the way down the line to such things as "noxious fumes" in the air, "work too difficult," "too many cockroaches" and like trivialities.

Demands Substantial — The economic demands of the big metalworking unions are large. The United Steelworkers have approved demands for a wage increase, a definite social insurance program and pensions. Although the union officials have not yet revealed their estimate of total cost of the demands, they are expected to total around 30 cents an hour, of which about one-third would be for increased wages and the remainder for social security benefits.

Other Demands Similar — Other unions will make similar costly demands. Electrical workers are asking for a $500 a year increase, divided among wage boosts and social security concessions. Autoworkers are asking for pensions, social insurance and wages, with the total demand approximating that of the steelworkers. John L. Lewis' coal miners have been silent of specific demands but are talking about a 20-cent increase in the tonnage royalty for the miners' welfare fund and a cut in the workweek without any reduction in wages.

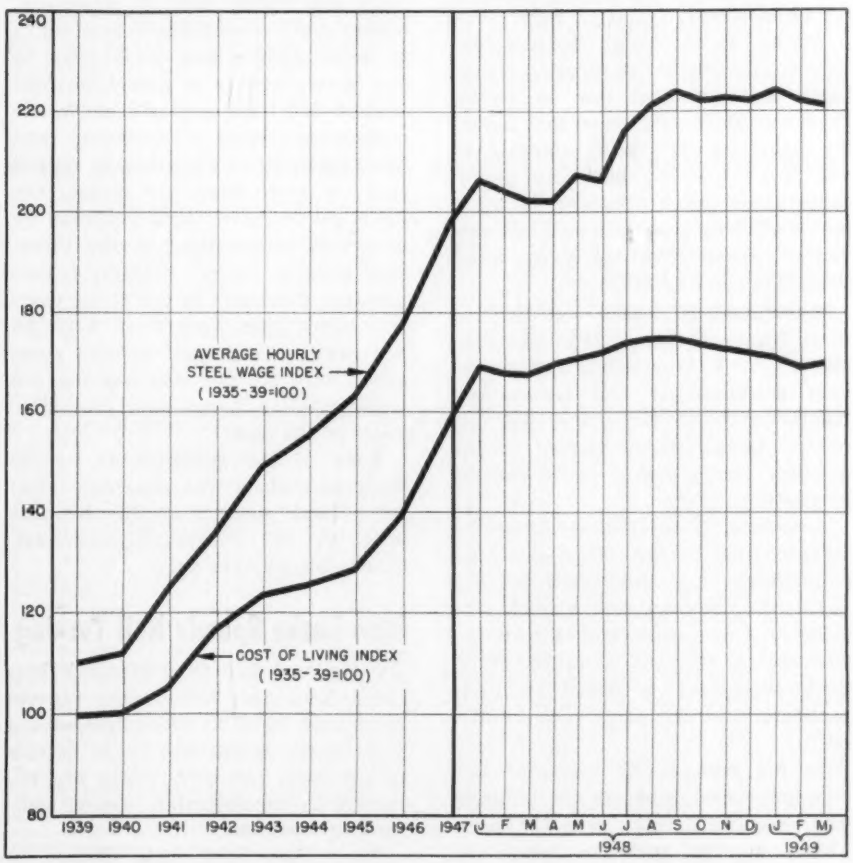
Economic Climate Deteriorating—Against such substantial demands is posed a less favorable economic climate in which demand for goods is diminishing, pressure for price reductions is increasing and employment wanting.

Tools Basic in Economy

Significance of modern production machinery stressed at spring meeting of NMTBA

BASIC economic significance of modern production machine tools, presses

WAGE INCREASES OUTSTRIP RISE IN LIVING COSTS



Average hourly earnings have increased substantially more than the cost of living since prewar. Above chart shows indexes of consumers prices, as compiled by the Bureau of Labor Statistics, and of average hourly earnings in the steel industry, both computed on a base of 1935-39. Indexes of other metalworking wages show the same trend as steel wages

and forging machinery was emphasized at the 47th spring meeting of the National Machine Tool Builders Association held at the Edgewater Beach Hotel, Chicago, May 12-13.

Sessions of the two-day convention were under the chairmanship of Lloyd D. McDonald, president of the association and vice president of Warner & Swasey Co., Cleveland. Attendance totaled 338, including dealers.

Speaking on the subject "Are We Giving Away Some of Our Invested Capital," Jerome A. Raterman, president, Monarch Machine Tool Co., Sidney, O., said: "Let's take an imaginary company and use round figures. We see in the statement of this ABC company that property, plant and equipment stand at $1 million. On its income account this company has taken $100,000 depreciation for the current year. Now let's assume that plant and equipment were bought ten years ago at a cost of $2 million. Thus it has been depreciated 5 per cent a year.

Under-Depreciated—"With costs as they stand today, to replace that equipment would cost $4 million—not $2 million. That company therefore is taking depreciation allowance of just half what actually is required for replacement."

Taking as his theme British historian Toynbee's contention that there is no natural law of cycles, President McDonald urged that industry insure its survival in adapting itself to our rapidly changing world. This means quick adoption of latest manufacturing machines and methods which benefit workers even more than they do capitalists.

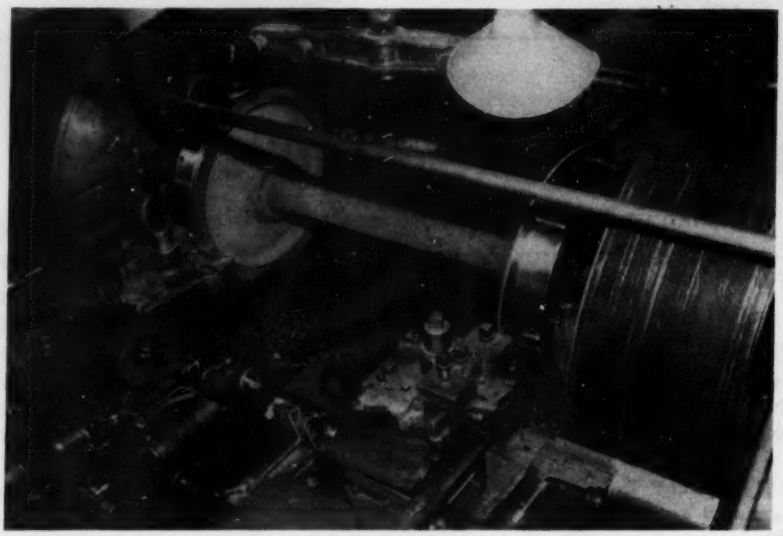
Investment In Youth — J. Edward Goss, Brown & Sharpe Mfg. Co., Providence, R. I., who heads apprenticeship activities of the association, hammered home the point that one of the things sorely needed in the machine tool industry is "invesment in youth."

Advances Threatened — American technological advancement and high employment are threatened by the myth of high corporate profits, fostered by government and labor union economists, William J. Kelly, president, Machinery & Allied Products Institute, told the machine tool builders.

In his address he highlighted a comprehensive analysis of inflation and postwar profits recently completed by the institute which he heads. Among conclusions were:

1. The average corporate profits in ten representative good years in the period 1909-48, was 9 per cent of national income and 6 per cent of sales, but in not one of the postwar years, 1946-48, did they reach this average; 2. postwar corporate profits, corrected for rising inventory costs and rising cost of equipment replacement, were lower in relation to national income and sales than in any previous year of peacetime production and high employment; 3. the replacement costs of inventory and fixed assets have exceeded by 60 per cent, or more than $19 billion, the funds set aside for such purposes by American corporations in the three-year postwar period, 1946-48; 4. corporation dividends in the three postwar years have been from 3 to 3.5 per cent of national income, compared with 5.3 per cent for the ten representative prosperous peacetime years of the past.

Tone of the speakers as to the business outlook was generally hopeful. Guest speaker at the banquet was W. W. Townsend, economist, Townsend, Skinner & Co.



PROFILING CAR WHEELS: Carbide tools are used to turn car wheels at a normal production rate of 20 pairs a day with a profiling attachment on a car wheel lathe at the Baltimore & Ohio's Ivorydale shops. Profiling attachment is manufactured by the Niles Tool Works Co. of Lima-Hamilton Corp., Lima, O.

New Lathe Speeds Roll Turning

BY END of this year Monarch Machine Tool Co., Sidney, O., expects more than 30 of its specially designed new engine lathes will be in service in the steel industry. These are expected to revolutionize present roll-turning methods.

There has been little change in roll turning for many years. In fact, some lathes still in service are over 80 years old. The new lathes equipped with Monarch-Keller electrical contouring controls and carbide tools save from 35 to 85 per cent in time, depending upon type of roll machined (see p. 96 for details).

A 32-inch machine has just been shipped to Bethlehem Steel Co. at Johnstown, Pa. Another will go to Republic Steel Corp. at Cleveland in a few days. Six others have been ordered by Youngstown Sheet & Tube Co., Colorado Fuel & Iron Corp., Timken Roller Bearing Co., Bethlehem Pacific Coast Steel Corp., a Belgian company, and Republic at Alabama City, Ala. A 60-inch machine will go into production this fall to handle larger steel mill rolls.

Monarch's business so far this year is running ahead of 1948, according to J. A. Raterman, president. "Prospects for the entire year are still somewhat beclouded by the general business situation," he said, "but the Monarch order backlog is the highest in 7 months."

April Steel Output Record Set

PRODUCTION of steel in April was 7,783,807 net tons, a record for that month, although operations averaged less than 100 per cent of capacity for the first time this year, American Iron & Steel Institute reported last week.

In 12 months ended Apr. 30, output of steel was over 92 million tons, a record for any 12-month period.

Production of ingots and steel for castings in the first four months of 1949 was 31,835,953 net tons, a record, a 12.6 per cent increase over the same 1948 period.

Steel Export Curbs Lifted

From numerous products by Office of International Trade as result of more domestic supplies

QUOTA export control restrictions were removed from a number of iron and steel products last week by the Office of International Trade and added to the list of decontrolled items announced in April. OIT reports increased domestic supplies made the lifting of controls possible but adds exporters must still secure validated licenses covering shipments of these products and must also observe all other applicable export regulations.

Items included in this announcement fall into three categories:

Group 1. Products for which applications may be filed at any time. Licenses will become effective upon their validation by OIT.

Group 2. Applications for licenses may be filed at any time but when validated will not become effective until July 1.

Group 3. License applications for these products should not be filed before May 23. Applications must include certification of a new order from a foreign purchaser or reconfirmation of a previous order; neither may be dated prior to May 20, 1949.

Complete listing follows:

Group 1

Strip, hoop, band and scroll iron and steel; cold-rolled steel, except venetian blind stock, baked enameled, in coils or cut to length (not exceeding 2 3/32-in. in width nor 0.015 in. in thickness).

Rail joints and splice bars.

Tie plates (including fish plates).

Malleable iron screwed fittings, 150 pounds pressure and under.

Boiler tube seamless or welded.

Pipe joints, gray iron, extension, 150 pounds pressure and under.

Iron and steel pipe fittings, 150 pounds pressure and under; couplings; galvanized pipe fittings; malleable iron pipe fittings; pipe nipples, lap welded, black; pipe plugs; unions; screw elbows and swage nipples.

Bale ties.

Floor drains, cast iron.

Group 2

Iron and steel bars and rods.

Iron bars, 1 in. and under.

Carbon steel bars and rods, hot-rolled, 1 in. and under; steel sheets, black, ungalvanized (except enameled, lacquered and painted).

Carbon steel: hot-rolled, cold-rolled (except tin mill black plate rejects, wasters and waste masters and cold-rolled sheet rejects).

Alloy steel, except stainless, both hot-rolled and cold-rolled.

Iron sheets, black (except enameled, lacquered or painted).

Rails, 60 pounds per yard or over; railway car wheels, steel; railway car axles, without wheels, steel; railway car axles fitted with wheels, steel.

Group 3

Concrete reinforcement bars (deformed and twisted only).

Barbed wire.

Steel Export Drop Continues

CONTINUING improvement in foreign iron and steel production is reflected in the Commerce Department's monthly ferrous export figures which are steadily declining. Semifinished and finished iron and steel products exported in February totaled 351,743 net tons, off about 39,000 tons from the January figure of 390,678 tons.

Largest tonnage exported in February was in the sheet, strip and plate classification which aggregated 129,157 tons for more than one-third of the month's total. However, all items within the group were below the preceding month except terne plate which increased slightly.

The only classification in which February overseas shipments were higher than in the preceding month was railroad supplies.

February exports by product groups were:

(Net Tons)

Semifinished	20,623
Iron and steel bars	44,836
Sheet and plates	129,157
Structural shapes	38,966
Railroad supplies	36,243
Tubes, pipe and fittings	52,263
Wire products	23,739
Nails and other fasteners	5,916
Total	351,743

Steel Shipments Set Record

SHIPMENTS of finished steel products rose to a new all-time high in March, totaling 6,305,681 tons, according to the American Iron & Steel Institute. This compares with 6,056,282 tons in December, 1948, the previous high.

In addition to these shipments, 608,996 tons were taken by members of the industry for conversion into further finished products or for resale.

Test Ore Utilization Process

EMPLOYING a variation of the Disco smokeless fuel process, Pittsburgh Consolidation Coal Co., in collaboration with National Steel Corp. and the M. A. Hanna Co., is making exploratory tests of a new method of utilizing extremely fine sizes of iron ore in blast furnace operations.

The new development involves a two-step test procedure. First, fine sizes of iron ore and metallurgical coal are mixed and passed through the special process, which agglomerates the mixture into ball-shaped lumps for use in the blast furnace burden. This part of the program is being carried out at Pittsburgh Consolidation's experimental facilities near Imperial, Pa.

The second step involves experimental use of the agglomerate in a blast furnace of the Weirton Steel Co., subsidiary of National Steel, at Weirton, W. Va.

Development work on methods of agglomerating iron ore fines has been stimulated by the increase in ore of this character expected to result from the steel industry's growing dependence on lower-grade ore deposits.

STEEL PRODUCTS SHIPMENTS, MARCH AND YEAR TO DATE

Steel Products	No. Reporting	Item	MARCH - 1949 Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	MARCH - 1949 Per cent of Total Shipments	MARCH - 1949 Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)	To Date This Year Net Shipments (Excluding Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale) (Net Tons)	To Date This Year Per cent of Total Shipments	To Date This Year Shipments to Members of the Industry for Conversion into Further Finished Products or For Resale (Net Tons)
Ingots, blooms, slabs, billets, tube rounds, sheet and tin bars, etc.	47	1	308,120	4.9	281,890	926,947	5.3	834,619
Skelp	5	2	11,305	0.2	47,579	* 22,761	0.1	* 120,873
Wire rods	19	3	57,166	0.9	30,970	165,538	0.9	77,877
Structural shapes (heavy)	11	4	394,344	6.3	3,224	1,111,289	6.3	8,141
Steel piling	3	5	32,064	0.5	25	79,520	0.4	949
Plates	28	6	684,468	10.8	22,502	*1,897,600	10.8	73,586
Rails—Standard (over 60 lbs.)	4	7	191,312	3.0	967	520,146	2.9	3,376
Rails—All other	5	8	16,033	0.3	370	46,720	0.3	512
Joint bars	7	9	11,694	0.2	4,232	36,140	0.2	9,519
Tie plates	6	10	48,595	0.8	-	126,309	0.7	41
Track spikes	8	11	11,290	0.2	-	34,963	0.2	35
Wheels (rolled or forged)	5	12	32,011	0.5	90	89,310	0.5	289
Axles	5	13	22,234	0.4	-	61,097	0.3	7
Hot rolled bars (including light shapes)	39	14	757,414	12.0	74,147	2,109,276	12.0	211,891
Hot rolled bars—Reinforcing	23	15	150,230	2.4	156	* 418,506	2.4	1,294
Cold finished bars	33	16	160,019	2.5	1,003	440,645	2.5	3,328
Tool steel bars	17	17	6,787	0.1	88	19,315	0.1	295
Pipe—Standard	16	18	210,198	3.3	5,364	583,809	3.3	14,784
Pipe—Line	12	19	228,510	3.6	2,036	598,574	3.4	6,605
Pipe—Oil country goods	14	20	164,079	2.6	9,038	403,693	2.3	25,447
Tubes—Boiler	3	21	11,712	0.2	956	31,375	0.2	3,353
Tubes—Mechanical and pressure	21	22	78,638	1.2	1,601	* 223,982	1.3	6,362
Miscellaneous pipe (including conduit)	11	23	27,825	0.4	66	* 76,625	0.4	784
Wire—Drawn	37	24	238,872	3.8	13,369	* 694,918	3.9	42,309
Wire—Nails and staples	17	25	83,761	1.3	1,286	231,316	1.3	3,596
Wire—Barbed and twisted	14	26	25,106	0.4	9	69,581	0.4	24
Wire—Woven wire fence	12	27	41,398	0.7	203	110,737	0.6	872
Wire—Bale ties	11	28	4,437	0.1	-	15,073	0.1	-
Black plate	10	29	60,739	1.0	43	195,577	1.1	43
Tin and terne plate—Hot dipped	9	30	158,898	2.5	-	441,862	2.5	10
Tin plate—Electrolytic	10	31	173,732	2.8	-	490,158	2.8	12
Sheets—Hot rolled	28	32	682,673	10.8	72,111	1,922,063	10.9	193,859
Sheets—Cold rolled	16	33	649,701	10.3	2,397	1,806,552	10.3	5,312
Sheets—Galvanized	15	34	153,931	2.4	86	425,617	2.4	255
Sheets—Long terne	8	35	13,586	0.2	121	39,348	0.2	348
Sheets—Enameling	7	36	19,562	0.3	104	52,239	0.4	401
Sheets—Electrical	11	37	42,875	0.7	-	132,674	0.8	-
Strip—Hot rolled	22	38	168,874	2.7	30,924	* 469,642	2.7	* 84,509
Strip—Cold rolled	34	39	170,370	2.7	2,039	486,332	2.8	* 6,527
All other	5	40	1,524	-	-	4,091	-	-
Total steel products	138	41	6,305,681	100.0	608,996	*17,619,520	100.0	*1,742,074

* Adjusted.

Metalworking Earnings

Show decline during first quarter of 1949 compared with last three months of 1948

MOVEMENT away from the period of abnormally high demand for goods is reflected in the metalworking industry's net earnings in the first quarter of 1949.

The accompanying compilation by STEEL shows 50 metalworking companies representing a broad cross-section of the industry had aggregate net earnings of $60,462,917 that quarter, compared with $82,273,458 in the last quarter of 1948. The decline is a result of lower net earnings among 39 of the 50 companies. Five of the 39 companies reported net losses for the first quarter of 1949. For the fourth quarter of 1948, only one company in the metalworking group reported a net loss.

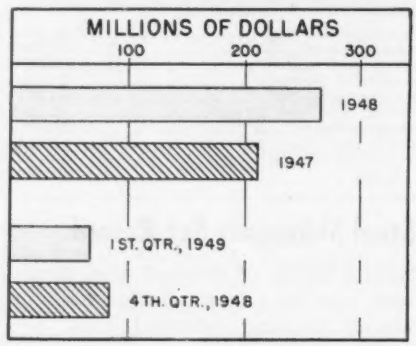
The heavy demand for goods, the increased availability of steel and other metal products and components, and the relative freedom from labor strife in 1948 enabled the 50 companies to boost their aggregate net earnings from $209,358,255 in 1947 to $267,599,453 in 1948, a 27 per cent gain.

However, the increase was due more to a substantial rise in sales than to a widening of profit margins, for sales in 1948 aggregated $3,521,972,349, compared with $2,970,766,633 in 1947, whereas the rate of net earnings rose from 7.04 per cent in 1947 to only 7.59 per cent in 1948.

Thirty-two of the 50 companies showed greater net income in 1948 than in 1947, while 38 reported sales increases.

NET EARNINGS

(50 Metalworking Companies)



Economic Committee

Majority and minority in Congress miles apart in viewpoints on President's program

ISSUES in the ideological struggle which has been tending toward the "left" with renewed vigor since the November election are highlighted in two reports by the Joint Congressional Committee on the Economic Report.

The majority endorses the President's economic report submitted in January. The minority accuses the majority of seeking to "set up in this country a planned and controlled economy and increase taxation for that purpose."

Keynote of the majority report is the concept that the government, through the Employment Act of 1946, "has assumed the responsibility of co-ordinating its plans, functions, and resources to maintain a high-level economy of maximum employment, production, and purchasing power."

Basic Conclusion—One of the basic conclusions in the President's report is that gross national product is di-

Trend of Net Earnings in Metalworking Industry

	Net Earnings 1st Qtr. 1949	Net Earnings 4th Qtr. 1948	Net Earnings 1948	Net Earnings 1947	Sales 1948	Sales 1947
Air-Way Electric Appliance Corp.	$ 253,387	$ 174,730	$1,063,201	$ 952,968	$14,879,455	$10,975,398
Allis-Chalmers Mfg. Co.	4,877,983	5,572,011	15,441,523	5,422,308	328,101,328	211,949,890
American Brake Shoe Co.	1,466,722	1,825,665	5,184,317	4,543,001	120,190,784	107,632,965
American Machine & Metals Inc.	28,469	211,065	636,585	562,057	13,122,554	14,399,555
American Radiator & Standard Sanitary Corp.	3,742,000	8,916,105	26,123,105	19,425,912	236,142,414	200,043,537
American Stove Co.	608,101*	382,700	570,690	1,203,393	30,553,378	28,995,770
Autocar Co.	89,976*	165,807	389,661	2,250,955	30,871,587	39,460,313
Baldwin Locomotive Works	918,635	723,944	3,167,741	2,651,331	126,434,845	94,884,746
Blaw-Knox Co.	925,976	1,404,220	4,050,895	3,003,701	68,728,473	55,626,055
E. W. Bliss Co.	403,733	292,384	2,285,509	2,285,274	27,241,657	33,787,081
Briggs & Stratton Corp.	773,385	901,258	3,288,839	2,637,352	24,046,522	21,775,431
Budd Co.	3,816,588	1,486,818	9,329,864	4,086,253	219,583,651	193,500,132
Chapman Valve Mfg. Co.	490,486	63,183	1,060,272	582,466	17,454,866	13,858,222
Clark Equipment Co.	1,279,941	2,012,849	5,441,340	3,989,991	74,496,571	61,172,023
Cleveland Graphite Bronze Co.	1,052,180	1,386,886	3,063,394	2,903,557	29,277,979	30,543,648
Cutler-Hammer Inc.	603,382	1,239,499	3,626,373	3,180,489	40,718,590	39,590,299
Detroit-Michigan Stove Co.	55,204	236,119	1,957,561	2,445,857	20,936,353	20,693,376
Diamond T Motor Car Co.	97,494	47,402	1,112,997	1,909,108	37,465,803	41,678,282
Doehler-Jarvis Corp.	1,709,614	1,242,080	7,599,780	6,235,609	76,990,029	64,359,258
Eaton Mfg. Co.	2,710,024	2,928,241	10,971,106	7,436,132	128,132,677	99,602,639
Emsco Derrick & Equipment Co.	539,665	816,960	2,212,593	1,059,298	19,251,950	13,361,378
Gabriel Co.	112,783	336,503	778,302	363,037	11,474,213	7,218,249
Gardner-Denver Co.	708,434	483,328	1,971,732	1,967,917	22,045,031	21,011,251
Greenfield Tap & Die Corp.	106,309	185,413	681,024	765,356	10,722,841	12,091,288
Holland Furnace Co.	390,037*	1,711,198	4,033,081	3,696,320	41,020,005	35,129,642
Houdaille-Hershey Corp.	724,564	1,435,782	2,740,760	4,043,530	52,223,442	56,789,915
International Business Machines Corp.	7,818,310	6,914,951	28,100,535	23,553,952	161,982,781	144,543,141
Kalamazoo Stove & Furnace Co.	220,770*	7,579*	629,120	799,296	12,038,838	11,205,951
Lane-Wells Co.	438,100	583,530	2,414,330	1,750,851	13,687,230	9,877,216
Link-Belt Co.	2,031,250	4,557,711	11,731,863	7,016,042	106,008,988	87,322,766
Minneapolis-Honeywell Regulator Co.	1,341,158	3,762,008	5,942,008	6,193,509	57,600,527	60,596,021
Monarch Machine Tool Co.	117,731	224,625	639,823	726,407	8,005,791	7,944,392
Motor Wheel Corp.	655,904	1,249,514	3,447,236	2,225,089	58,339,674	46,111,016
Mullins Mfg. Corp.	748,051	1,495,897	6,418,222	4,794,617	47,414,584	37,631,055
National Acme Co.	293,866	592,047	1,505,019	2,202,838	14,699,716	17,311,525
National Cash Register Co.	3,027,064	4,147,082	14,015,549	11,311,091	175,503,103	144,631,794
National Supply Co.	3,060,277	5,132,894	12,227,362	8,591,807	160,100,318	133,570,590
Reed Roller Bit Co.	470,218	621,405	2,463,723	1,705,487	23,749,793	18,621,216
Rheem Mfg. Co.	563,500	672,306	3,162,903	2,606,915	58,744,097	60,258,287
Simonds Saw & Steel Co.	695,119	998,382	3,323,377	2,853,009	30,474,551	28,684,029
Square D Co.	838,570	1,301,491	3,736,012	4,228,240	40,224,029	36,941,417
Studebaker Corp.	5,207,800	5,722,248	19,114,972	9,127,103	383,644,524	267,998,838
Thompson Products Inc.	996,950	950,755	4,572,100	4,577,737	96,994,774	92,511,680
Towmotor Corp.	217,563	281,628	903,285	1,073,258	14,117,898	14,506,226
United-Carr Fastener Corp.	504,734	823,231	1,983,905	1,389,225	20,807,393	17,994,920
U. S. Hoffman Machinery Corp.	124,728*	109,224	355,592	974,994	18,138,882	24,223,561
Victor Equipment Co.	57,283	149,415	384,624	391,236	4,073,449	3,595,142
Westinghouse Air Brake Co.	3,795,627	4,267,499	15,875,193	13,376,662	89,938,311	78,990,809
Weston Elec. Instrument Corp.	146,788	6,357	454,349	729,378	11,566,920	10,596,061
Worthington Pump & Machinery Corp.	1,473,708	1,534,688	5,416,106	6,056,340	92,009,180	84,968,637
Totals	$60,462,917	$82,273,458	$267,599,453	$209,358,255	$3,521,972,349	$2,970,766,633

* Net loss.

vided in such manner as to invite a depression because consumer expenditures are too low, corporation profits too high, and private capital expenditures too high. The majority report develops this theme by questioning whether investment decisions of businessmen are in the best interests of the national economy.

Endorses Tax Hike—The majority report endorses the President's demand for higher taxes, for credit controls, for standby allocations authority, for authority to request cooling-off periods in advance of price increases in selected commodities, etc.

As an illustration of the need for government planning, the majority cites the steel industry. Steel producers, it says, have underestimated the demand during and since the war so that their assurances "may not provide a firm foundation for sound policy."

Minority Opposes Controls—The minority report sees no justification for the contention the President needs economic controls, holding that if any such need arises it should be dealt with by Congress in specific and limited fields, with the greatest protection of liberty. It believes a tax increase should be avoided by cutting government expenditures, and that a tax reduction should be effected if the international situation improves. Continued use of the Federal Reserve Board, it feels, should enable the government to continue its control of general banking and credit policies. The public-works program, it recommends, should be expanded or cut back as the outlook is deflationary or inflationary.

The minority opposes monopoly and collusive price fixing.

"We believe that within a short time American industry will face the problem of increasing imports at steadily decreasing prices which may interfere with full employment in the United States. The whole problem of exports and imports and their effect on a stable economy during the next two or three years is a serious one, and our committee should proceed immediately to consideration of that subject," it says.

As to what should be done to ward off a depression, says the minority: "We fully recognize the necessity of government action to alleviate the recurrent depressions which have brought hardship and poverty to so many . . . but we do not believe that this necessity forces the granting of arbitrary powers to government over every detail of the economy and the life of every American citizen."

Buyers' Market Normal

Sheet metal distributors told supply-demand balance in steel should be no cause for concern

THE steel industry during the first three months of 1949 operated at a rate which, if continued throughout the year, would result in production of around 22 million tons of flat-rolled sheet and strip, a new record and roughly about 76 per cent more than was consumed in 1940.

That's what R. M. Nelson, supervisor of distributor programs for the Market Development Division, Armco Steel Corp., Middletown, O., told the National Association of Sheet Metal Distributors meeting in Columbus, O., last week.

Citing the succession of events which has marked the approach of demand-supply balance in steel, Mr. Nelson said there is no necessity for sellers to "fear" the return of a buyers' market since such is a normal condition in the sale of steel. He said the salesman again is coming into his own and it is up to him to take the improved steel products developed in the industry's research laboratories, and the greater tonnages being produced by the mills, and create an expanded economy.

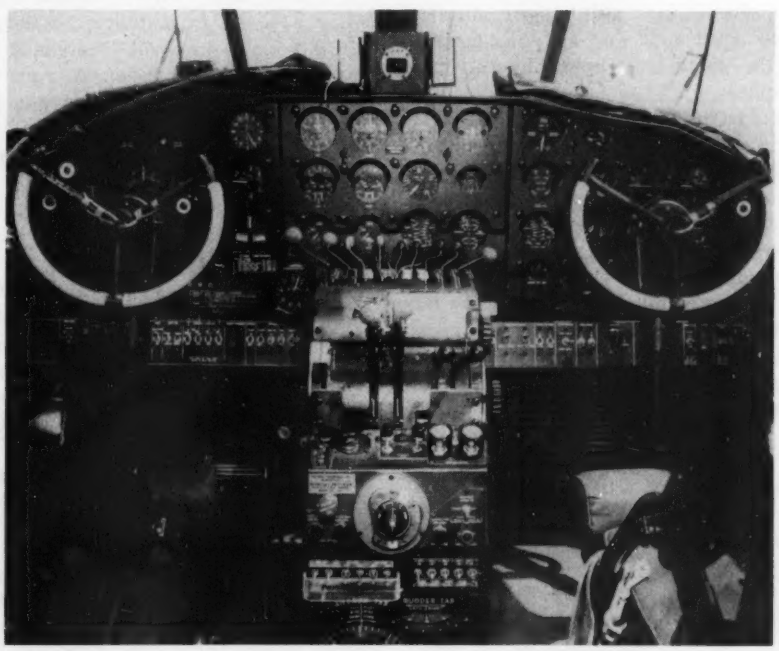
New Development — The speaker told the distributors of a new Armco development which he said will revolutionize the manufacture of galvanized sheets. Coils of sheet steel are coated with zinc by a continuous process.

Quantity production of the new product had just got under way when the war broke out and the entire output was taken for military use. Government restrictions prevented expansion of capacity during the war, but since then two additional units have been installed and are now in operation.

With installation of a fourth major unit, the speaker said, the patented coating process will be offered other steel companies under license arrangements.

Under the Armco process a coil of clean strip enters a furnace with controlled atmosphere consisting mostly of a mixture of hydrogen and nitrogen with air essentially excluded. Here the surface of the strip is made ready for its journey through the bath of molten zinc. Here, too, another important change takes place; the steel is annealed and softened. After leaving the unit, the special zinc-coated steel is again coiled, or is sheared into sheets for shipment.

The same unit which coats the steel with zinc, also makes possible the continuous coating of strip steel with aluminum.



NOTHING TO IT: Instrument panel and control box of one of the Navy's patrol bombers, the Lockheed P2V-2, is typical of the complexity of modern multi-engine aircraft, particularly of the military variety in which guns, rocket releases and related equipment also must have readily accessible controls. Observable in the illustration are at least 38 instrument dials and 85 switches, knobs, pushbuttons and control levers

Cleveland Exposition

Points up rapid advances being made in mechanization of coal mining industry

THE DARK recesses of the nation's coal mines may hold far brighter opportunities for sales of mechanical mining equipment than might have seemed possible in view of the inroads by gas and oil into business formerly held by the coal industry.

There are at least two reasons why it appears this way: 1. Necessity at the present moment to remain competitive with the rival fuels is a strong support for further mechanization of mines; and 2. the probability that coal eventually will be relied upon as the main source of oils and gas made synthetically.

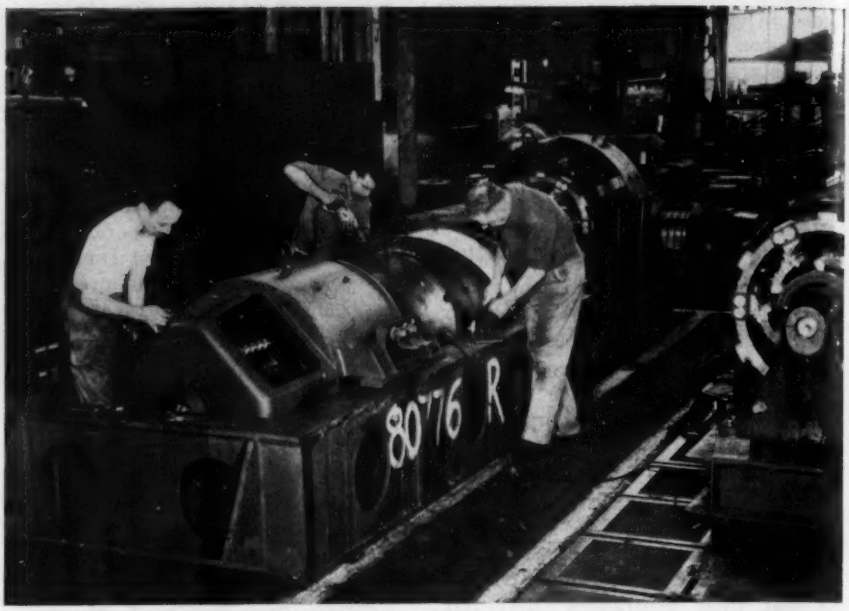
Aware of Opportunities—The manufacturers of mining machinery are wide awake to these opportunities; in fact they, as usual, are in the vanguard in mining progress. Without their foresight, ingenuity and inventiveness the mines in the United States would not be able to rank head and shoulders above the mining industry of any other country.

To show the coal mining industry their latest machinery, the manufacturers held their biennial exhibit in Cleveland four days last week, at the 1949 Coal Convention and Exposition of the American Mining Congress. The machinery manufacturers plus the makers and sellers of other mine equipment and supplies provided the show with approximately 220 exhibits.

Registration Heavy — Indicating mine operators are intensely interested in finding new ways to cut costs, the registration early in the show was exceeding that of two years ago when total registration was around 9200.

Centers of much attention were the continuous mining machines—about the newest things in mining. They even do away with some of the tasks that had already been mechanized. One new, mobile machine operated by one man just advances right into the coal seam, chews out the coal at the rate of two to five tons a minute and loads it into a waiting car. The producer of one of the continuous miners foresees the possibility that these machines may do away with the need for much of the other mining machinery it manufactures.

Although much of the equipment for mines must be small and compact because of space limitations in underground pits, bigness is utilized wherever possible to do a job economically and fast. An example of this was a rubber-tired, 50-ton capacity coal hauler for use in open pit or strip mines.



Designed to meet requirements for direct-current power for mining coal with recently-developed continuous mining machines, this portable 300-kw motor-generator set was exhibited by Reliance Electric & Engineering Co., Cleveland, at the 1949 Coal Convention and Exposition last week. Unit provided power for many of the working exhibits at the show

It was amply demonstrated at the show that regardless of how vast the amount of coal that may be needed to provide synthetic oil and gas the mining machinery manufacturers will be able to provide the equipment to do the job. One feature of the latest machinery is its mobility. No longer is mining equipment restricted to rails; instead much of it runs on rubber tires or caterpillar treads and can be moved about with ease.

Mechanization Advances — Mine mechanization has developed to the point where not more than 3 per cent of the national production today is hand cut. By last year 70 per cent of the coal was machine-loaded, and this percentage is growing. Haulage is also widely mechanized, only about 2 per cent of the coal tonnage now being hauled out by animals. More attention is now being given to mechanizing operations after the coal has been brought to the surface. Because of the additional importance today of cleaning, washing and sizing of coal, the great number of coal preparation plants already functioning are being augmented by the construction or rebuilding of 75 other large ones.

Vast Mechanization Predicted

DESIGNS already on the drawing boards of industry's engineers foreshadow an era of vast increases in mechanization and plant expansion that will make present plant and equipment seem embryonic, E. E. Potter, vice president, General Electric Co., said speaking at the 41st annual meeting of the National Electrical Wholesalers Association in Cincinnati.

He said increased mechanization promises great reduction in costs and the production of more goods for more people at lower prices. More scientific methods of distribution and selling are also essential, he said.

Plan Strip Mill for Australia

UNITED Engineering & Foundry Co., Pittsburgh, has been engaged as consultant and to aid in construction of hot and cold-reduced strip mill facilities at the Port Kembla, Australia, works of Australian Iron & Steel Co. Ltd., an associate company of the integrated Broken Hill Proprietary Co. Ltd., Melbourne, Australia.

Much of the mill equipment will be built by the latter company from engineering drawings furnished by United Engineering. However, such units as drive mill parts, slab shear and hot and cold mill housings will be made by United Engineering.

The hot mill facilities, rated at 2000 fpm, are scheduled to be operating late in 1951. Cold-reduction facilities for rolling of strip to tin mill gages, while having been given governmental support, will not be installed until after the hot mill is in operation.

European Steel Cartel?

Rising production, return of buyers' market give impetus to revival talk

RISING European steel production and return of a buyers' market have given impetus to talk of reviving the steel cartel. Swiss reports say that informal discussions on the subject have been held by steel executives of Belgium and Luxemburg. The first feelers have reached Bizonia, too, from French groups.

Western Germany

BIZONAL Germany's steel ingot and pig iron production both increased by about 1000 tons a day in April. Totals for the month were 705,079 tons of steel ingots and 568,842 tons of pig iron. The totals represent increases of 95 and 82 per cent, respectively, in comparison with the output the previous April.

April had fewer working days than March, with the result that total monthly production was somewhat less than in March, although the daily average was higher.

Accompanying general production increases in Western Germany are the first price reductions, now that a buyers' market is returning. The Opel passenger car has been reduced by $180 or 10 per cent, and predictions are that the Volkswagen will be cut 20 per cent in price, or by about $300.

Further complicating the picture now is the uncertainty over the outcome of the Big Four talks on Germany. Political decisions reached by the Big Four could have a profound effect on the Ruhr's economic future. Optimism currently rules, however, and some industrialists believe that the talks will at last lay the groundwork for a greater economic stability in Germany. This stability might eventually attract American money, the reasoning goes, for much needed capital expansion in the Ruhr.

Great Britain

STEEL ingot production in Great Britain continues to mount, but last week the House of Commons passed and sent to the House of Lords, by a vote of 330 to 203, the bill to nationalize the steel industry. Labor's measure faces bitter, but probably futile, opposition in Lords, which can hold up a Commons bill one year only.

The bill calls for the government to take control of the plants May 1, 1950, on the eve of the general elections scheduled next summer. However, it allows postponement of this takeover for as long as 18 months.

Ask Lower German Scrap Price

AMERICAN private interests have been bringing pressure for a reduction in the export price of $28.50, f.a.s. North German ports on German No. 1 heavy melting steel. The matter is expected to be discussed at the OEEC (Organization for European Economic Cooperation) in Paris May 24. Britain, France, Italy and other consuming countries are paying $28.50.

The $28.50 price figures out to something over $50 delivered in the Pittsburgh district, which compares with the present level of $24 on domestic No. 1 heavy melting steel.

U. S. imports have been rising due to heavy deliveries against contracts placed last year. Census figures show imports of German scrap in the amount of 61,186 gross tons in January, 103,898 in February.

Addresses of Foreign Purchasing Missions

NAMES, addresses and functions of the following foreign purchasing missions and agencies operating under ECA-financed programs are listed for the benefit of American metalworking companies.

Economic Cooperation Administration recommends the general practice of using private channels of trade be followed as much as possible, but it recognizes the nature of some purchasing requires closer government supervision. Purchases made other than through the missions and agencies listed below will be effected in normal export channels of trade. Office of International Trade, Department of Commerce, maintains lists of foreign importers and dealers which are obtainable from its field offices upon request for a nominal fee.

AUSTRIA

Fuel Imports Inc. (Oesterreichische Brennstoff-Import Ges. m.b.H.), **24 Stubenring, Vienna.** Procures coal from European suppliers. Currently no U. S. purchases are contemplated.

BELGIUM-LUXEMBURG

Belgian Economic Mission, 1780 Massachusetts Ave. N. W., Washington. Currently procures wheat, tinplate and radioisotopes.

BIZONE GERMANY

Joint Export-Import Agency, APO 757, c/o Postmaster, New York. Procurement functions of this agency currently being reduced. Exporters, however, may contact JEIA on all matters pertaining to purchases for Bizone.

FRANCE

Public Works Mission, 1761 R St. N. W., Washington. Purchases tele-communications equipment, motorized barges, cranes, spare parts for Ministry of Public Works only. To be dissolved by June 30, 1949.

Merchant Marine Mission, 1330 18th St. N. W., Washington. Purchases ships and spare parts for liberty ships, cargo ships and tankers for the Ministry of Merchant Marine.

French Office of Power Stations, 1322 18th St. N. W., Washington. Purchases general construction equipment, power plants, electrical material and spare parts.

French Mining Equipment Purchasing Office, 1322 18th St. N. W., Washington. Purchases coal mining equipment.

French National Airline, 683 Fifth Ave., New York. Purchases airplanes, spare parts, aerial navigational equipment.

French National Railways and **French North African Railways, 1759 R Street N. W., Washington.** Purchases railway equipment, ties and spare parts.

French Office for the Purchase of Well Drilling Equipment, 44 Beaver St., New York. Purchases well drilling equipment and parts.

Groupement for the Purchase of Petroleum Products, 44 Beaver St., New York. Purchases raw petroleum, gasoline, fuel oil, lubricants, kerosene, paraffin.

French Steel Procurement Agency, 1761 R St. N. W., Washington, or 44 Beaver St., New York. Purchases steel and ferrous metals.

Groupement for Purchase of Nonferrous Metals, 44 Beaver St., New York. Purchases antimony, copper, copper alloys, lead, zinc, cadmium, bismuth, tin and aluminum.

Association for French Coal Purchasing, 1520 New Hampshire Ave., Washington. Purchases coal and coal-tar pitch in the U. S. for various French governmental, industrial and private users.

FRENCH ZONE OF GERMANY

Joint Export-Import Agency (French Zone Branch Office), Hotel Baeren, Lichtenthal, Baden-Baden; Cable address: JEXIM, Baden-Baden, Germany. All purchasing for the French zone is consummated in Baden-Baden. U. S. exporters should direct all inquiries to this office.

GREECE

Ministry of Supply, Athens, Greece. Conducts bidding and selects successful (low) bidder for procurement of its own requirements.

Ministry of Reconstruction, Athens, Greece. Conducts bidding and selects successful (low) bidder for procurement of its own requirements.

ITALY

Italian Technical Delegation, 740 11th St. N. W., Washington. Acts on behalf of Italian Ministry of Foreign Trade. Procurement is limited to spot requirements of Italian government agencies.

Italian Coal Procurement Agency, 1424 K St. N. W., Washington. Purchases coal in the U. S. for various Italian governmental, industrial and private users.

TURKEY

Turkish Economic Mission, 1700 Webster St. N. W., Washington. Purchases for the Turkish state mining and industry program.

UNITED KINGDOM

U. S. suppliers, manufacturers and exporters not having representation in the U. K. may direct inquiries regarding ECA-financed items to the appropriate agency listed below or to the U. K. Treasury and Supply Delegation, 1800 K St. N. W., Washington.

Molasses and Industrial Alcohol Directorate, Board of Trade, Sunninghill, Downs Road, Epson, Surrey. Purchases molasses, acetic acid and acetic anhydride.

Sulphuric Acid Control, Board of Trade, 166 Piccadilly, London. Purchases sulphur.

Nonferrous Metals Directorate, Ministry of Supply, Shelimex House, London. Purchases copper, lead, zinc, aluminum.

British Iron & Steel Corp., Ministry of Supply, 43 Exchange Place, New York. Purchases iron and steel.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

Only minor savings expected from current economy moves in Congress. Federal spending continues to expand. Three-fourths of budget goes for past wars and preparedness

ECONOMY moves in the Senate may lop something off the big House appropriation bills—but not much. Projected savings that are making the headlines these days are peanuts when set against the $43-billion budget.

This certainly is the case with the most widely publicized economy step, the Senate's action in recommitting to its Appropriations Committee the $2.2-billion Labor & Federal Security bill with instructions to shave off 5 per cent. It develops that the maximum reduction permissible is around $15.5 million—for the big items in this bill, such as grants for public assistance, funds for the National Mediation Board, the Railroad Retirement Board, for maternal and child welfare, for the United States Employment Service and for some other purposes and agencies, are set by mandatory yardsticks and are not reducible.

Deficit in Sight—Current talk is of a $3-billion deficit in fiscal 1950 unless taxes are increased. Although congressmen get the cold shivers when a tax increase is mentioned, a substantial increase in the load is in the cards for 1950 as affairs now are going.

Congress could do a lot to cut government expenses if it would set up a competent staff to watch all the wheels go round and reveal where money was going down rat-holes; it could do a lot by cutting out only such instances of inefficiency as the Hoover commission has reported.

But even if they were provided with such machinery, most congressmen still would vote on appropriations with a sense of futility; on the one hand are the expenditures which are regarded as essential to national solvency and military security and on the other are the demands from the "people" for more money for this and that at home. Such needs and demands do not encourage real economy thinking.

Cutting Difficult — "The budget could be cut by really tremendous amounts, by nearly 40 per cent, by doing away with the National Military Establishment," recently remarked Senator Francis J. Myers (Dem., Pa.). "It can be cut by billions by repudiating the interest on the national debt or our pledges to our veterans. It can be cut by perhaps $10 billion by dumping overboard all our foreign commitments. . . . We aren't going to do any of these things, of course, and that is why I say it is virtually impossible to cut government spending by a sufficient amount in this coming year, and in the next few fiscal years, to enable us to reduce the national debt by any sizable amount. . . When we ask ourselves whether we can afford to spend all this money we reach the reluctant conclusion in most instances that we can hardly afford not to. . . . It is, unfortunately—and I mean unfortunately—a war chest for the survival of American freedom."

War Costs Heavy — What Mr. Myers had in mind was that, roughly, three-quarters of the money we are spending goes to pay for past wars and to counter the Russian menace.

But even should a change in Russia's attitude permit a reduction in spending for the military establishment, aid to Europe and allied objectives, the money thus saved would soon be spent in other ways on the home front.

Take the President's social program—which most legislators think will be adopted, maybe not this year, but eventually. Nobody yet knows what the proposed health plan will cost; most of the $6 billion annual cost is to be raised by a 3 per cent payroll tax split between employers and employees, but it is clear that large and increasing sums will have to come annually out of general funds to support the program as a whole. The bills to amend the Social Security Act which the Ways & Means Committee is working on can cost up to $11 billion annually for broadened old-age and survivors' insurance, permanent and temporary disability payments, lowering the age limit, etc.

Social Security Costs Growing—Altogether, the social security program now under discussion could cost as much as $27.5 billion by 1970 compared with the present cost of $4 billion, with a still-unknown portion over and above payroll tax collections to come out of general funds.

In addition, the social program includes the Senate-approved housing measure proposing federal expenditures that would come to several hundred millions a year.

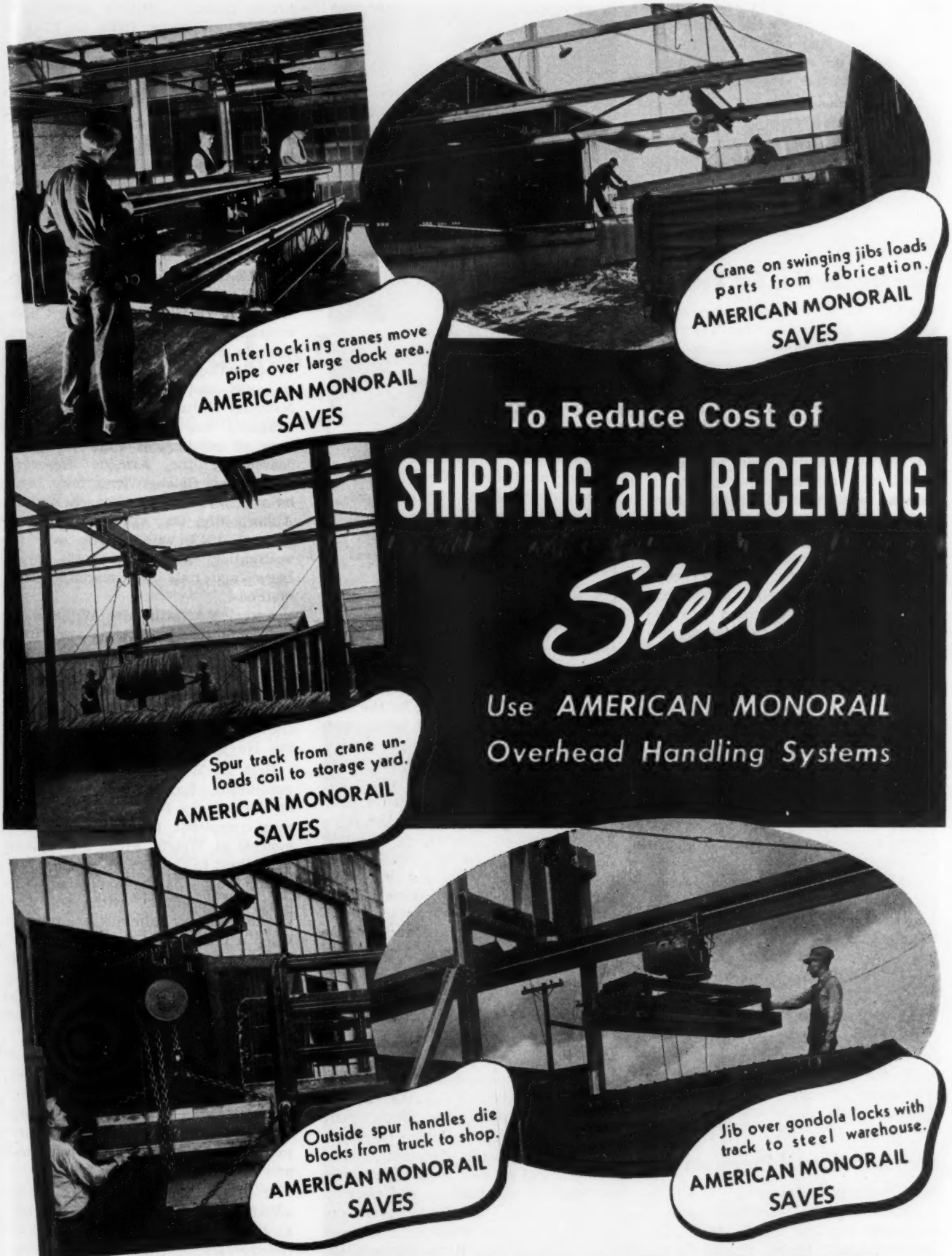
And right around the corner are other projects for which legislators' minds are being conditioned—putting the government into the steel business at a possible cost of several billions, expanding the government's activities in the power field, etc.

Economy? The word is a misnomer when applied to today's handling of fiscal affairs of the government. The trend continues towards ever increased spending.

MARITIME HEAD: Maj. Gen. Philip B. Fleming, who has been head of the Federal Works Administration, and recently was named chairman of the Maritime Commission, checks over some FWA papers before turning the federal works job over to Jess Larson who succeeds him. NEA photo

Johnson Bill Pigeonholed

NO PERMANENT legislation to clarify the confusion over legality of freight absorption is expected to come from the interested group, the Senate Judiciary Committee, this year. After extensive consideration, predominant opinion in the committee is that the most that should be done now is to seek congressional approval of the Myers so-called "moratorium" bill giving assurance of the right, until July 1, 1950 "to independently quote and sell at delivered prices or to absorb freight for the


Interlocking cranes move pipe over large dock area.
AMERICAN MONORAIL SAVES
Crane on swinging jibs loads parts from fabrication.
AMERICAN MONORAIL SAVES
To Reduce Cost of
SHIPPING and RECEIVING
Steel
Use AMERICAN MONORAIL
Overhead Handling Systems
Spur track from crane unloads coil to storage yard.
AMERICAN MONORAIL SAVES
Outside spur handles die blocks from truck to shop.
AMERICAN MONORAIL SAVES
Jib over gondola locks with track to steel warehouse.
AMERICAN MONORAIL SAVES

THE AMERICAN MONORAIL COMPANY

13102 ATHENS AVENUE CLEVELAND 7, OHIO

purpose of engaging in competition in good faith." Committee members want to wait and see what industry does about its selling prices during this contemplated year of immunity.

Therefore the committee has placed the Johnson bill back in pigeonhole until next year; this is the bill (S. 236) which would give manufacturers entire freedom in quoting delivered prices, or in wholly or partly absorbing freight—just so they did it on an individual basis.

Mine Owners May Get Redress

THOUSANDS of small mine operators will get redress for a scurvy trick the government worked on them if the Engle bill to amend the Contract Settlement Act of 1944 is enacted; it is on the House union calendar by favorable report of the House Judiciary Committee. Early in the war all-out encouragement was given to all who would help get out increased production of strategic minerals, only to lose their contracts when the submarine menace was overcome. The great majority engaged in manganese mining; when the cheaper, higher-grade foreign manganese ore again started to come into the country on a large scale, the government threw the domestic miners out of business by increasing the minimum acceptable manganese content. Many of the operators lost their life savings as a result.

The Engle bill, H. R. 834, would authorize payment of claims of these parties.

"We are of the opinion," the committee report says, "that to deny relief to these claimants would imperil the position of the government were another emergency to arise requiring immediate supplies of the critical minerals here involved. Niggardly treatment now of their claims would undoubtedly persuade them against re-engaging in the same activity in the event they were called to do so."

The bill is on the lines of the Dent Act under which $3,162,040.75 was paid out to 373 mine operators in 1921 for losses they sustained in launching mining ventures for the government in World War I.

Proposes Mineral Premiums

THE Murray-Engle Mine Incentive Payment bill (H. R. 976) reported favorably by the Mines & Mining Subcommittee, House Public Lands Committee, but held up in the full committee, would make it mandatory for the government to place contracts for stockpiling with anyone who can produce a metal or mineral on the Munitions Board's stockpiling list. Premiums known as "production payments" would be paid the producers to compensate them for high costs. On copper, lead and zinc the premiums would be the difference between current prices and the highest prices plus highest production premiums received for those metals during the period June 30, 1942, to June, 1946, inclusive. On other metals and minerals the payment would be the highest amount paid during the same period.

The bill sets $1.40 per long ton unit of contained manganese as the purchase price of ore containing 35 per cent or more manganese, plus 5 cents a unit for each 1 per cent above 35 per cent.

HEADS C. OF C.: Herman W. Steinkraus, president of the Bridgeport Brass Co., is new president of the Chamber of Commerce of the United States. He succeeds Earl O. Shreve, former vice president, General Electric Co.

Manganese Outlook Brighter

WASHINGTON advices from India and South Africa promise accelerated shipments of manganese concentrates from those sources to the United States in coming months. India again has set a quota of 100,000 gross tons for second quarter shipment to the United States and expects to ship at least 350,000 tons to this country in all of 1949. South Africa is expected to ship at least 300,000 gross tons to the United States during 1949. Both countries are solving their transportation difficulties, South Africa with the help of railroad cars obtained from Canada, and India with cars of home manufacture.

Imports of manganese from South Africa came to 216,576 gross tons in 1948, and from India to 213,445 gross tons.

Prospects for an increase in manganese ore imports from the Gold Coast in 1950 are considered good. Our imports from the Gold Coast in 1948 came to 132,971 gross tons.

In the meantime, plans for production of more manganese at home continue to be pushed.

Government Appointments

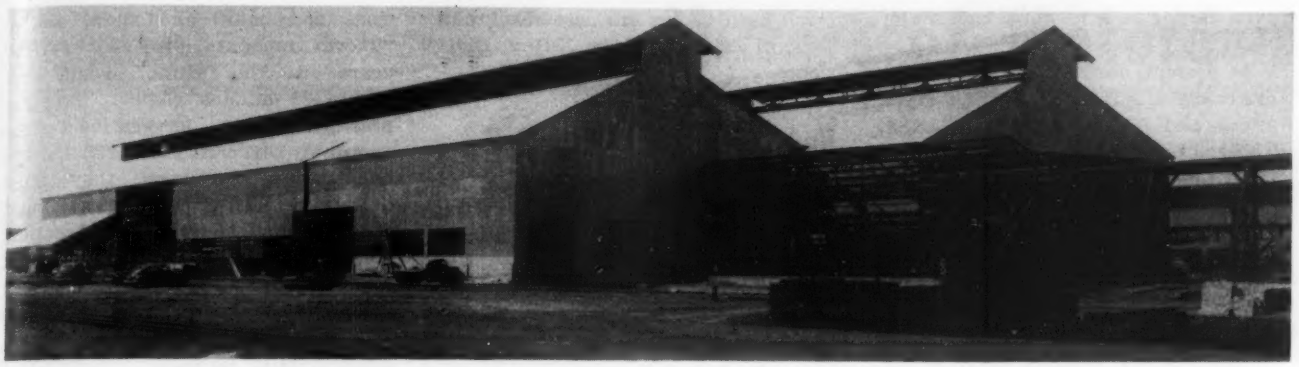
E. BRYAN WILLIAMS has been appointed executive director of the Research & Development Board's new committee on equipment and materials. In this post he is charged with co-ordinating and evaluating military research and development for the National Military Establishment. Mr. Williams has been assistant chairman of mechanical engineering research at the Armour Research Foundation, Chicago, since May, 1947; he was director of research for the Auburn Mfg. Co., Auburn, Ind., from 1944 to 1947, with charge over investigation of new products, processes, materials and manufacturing methods.

Associated with Mr. Williams in the committee secretariat are Edwin K. Woods, deputy executive director, formerly with the Signal Corps and the Transportation Corps of the Department of the Army, and John Garrett, panel director, formerly of the Navy's Bureau of Ordnance.

Bert H. White, Buffalo, industrial consultant, formerly vice president of the Liberty Bank of Buffalo, former consultant to the commanding general at Wright Field, and special consultant to the former Smaller War Plants Corp., has been appointed industrial consultant with the Economic Recovery Administration to develop a plan to aid "small business." The appointment is in line with recent congressional action directing the ECA to provide small business firms with advance information on proposed ECA-financed purchases.

Charles A. Richards, long active in export connections in New York, has been appointed special consultant with Office of International Trade to improve OIT's foreign trade promotion and its services to importers and exporters.

C. Tyler Wood, formerly deputy assistant Secretary of State for economic affairs and recently assistant deputy administrator of Economic Cooperation Administration, has been named as ECA director of operations. Enos Curtain, formerly president, Technical Managers Inc., New York, has been appointed deputy director of operations.



C. F. & I.'s 27-stand continuous rod mill is well on its way to completion at Pueblo, Colo., and may be placed in operation somewhat in advance of the scheduled starting date of Oct. 1

Colorado Fuel & Iron Expands

New 27-stand continuous rod mill, additional wire drawing and fabricating facilities and other equipment modernization increases wire capacity. Work ahead of schedule

CONSTRUCTION is well under way on Colorado Fuel & Iron Corp.'s new $5.2 million Morgan 27-stand continuous rod mill at its Pueblo, Colo., plant and the initial starting date of Oct. 1 may be beaten by at least two weeks.

Improvement Program—This new mill is part of $15,876,000 which has already been expended on the modernization and expansion program launched by Carl W. Meyers, president, when he took over the C. F. & I. presidency Sept. 10, 1946. Of this total, $9,951,000 has gone to the Colorado Division, $4,925,000 to the Wickwire Division and $1,000,000 to subsidiary companies.

The rod mill already has been supplemented with additional wire drawing and fabricating facilities which will bring total annual capacity up to 180,000 tons from 140,000. A Garrett mill, built in 1903, will be abandoned.

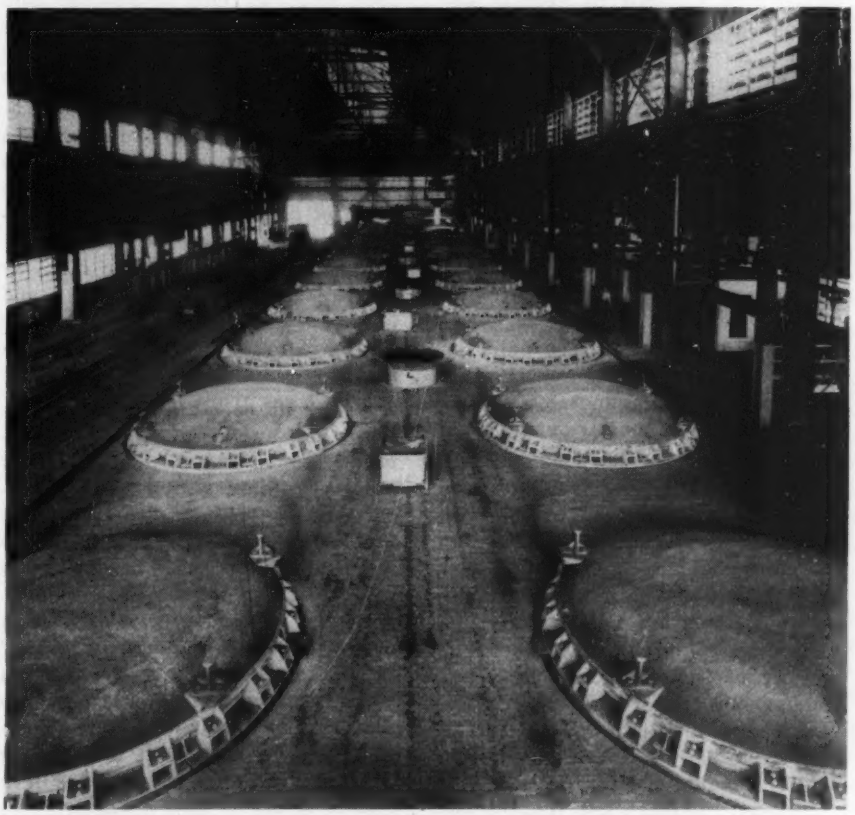
New Mill—The first four stands of the new mill will break down 4⅜-in. square billets, each about 23 feet long and weighing 1450 lb, into 2½-in. squares. The latter will be sheared into two lengths and then placed in a holding furnace to restore heat to about 2250° F. Then follow nine roughing stands, five stands in tandem, an intermediate stand, second intermediate stand and seven high-speed finishing stands. The mill is unique in that up to 1¼-in. rods can be taken off the second intermediate stand and be delivered to two pouring reels.

However, it is designed to roll either two or three strands simultaneously from ⅜-in. down to No. 5 rod which will be coiled on six laying type reels, taken off on a flat conveyor and transferred to a 1400-foot hook-type cooling conveyor.

Wire Capacity Increased — Forty-foot shuttle cars will be used to move the coils to the wire mill nearby where C. F. & I. has just placed a battery of 14 new Vaughn continuous wire drawing machines into operation. Four of these machines are suitable for drawing high carbon wire. One will draw 12½ to 16 gage and the other three 17 to 24 gage. Ten machines will draw 10 to 24 gage low carbon wire.

The new rod mill, of course, will provide additional economies for the reason that 700-lb coils can be handled in the wire mill in place of present 165-lb bundles. In fact, the pay-off flips for the new wire drawing machines are equipped to handle three 700-lb coils. Other wire mill improvements include new galvanizing equipment, high speed wire netting and welded fabric machines and additional storage space.

Blast Furnaces—Two furnaces have been relined since the war, including "F" furnace built in 1942. Two coke



Twenty-four new Salem circular-type soaking pits, each holding 12 ingots, have been installed at the Colorado Fuel & Iron Corp. as part of it expansion and modernization program

oven batteries also have had major repairs.

At present, about 50 per cent of the ore charged is from its Sunrise, Wyo., mines and 50 per cent from Utah. These ores are blended in a bedding plant built during the war with company funds. Fines, of course, are sintered before charging.

More Steel Capacity—The 16-furnace open-hearth department has been showing an average operation of 14.7 furnaces. Originally rated at 60 tons, these furnaces now are producing about 110 tons per heat. So far, all-basic refractory furnace linings have not been tried out but basic ends and fronts are being used. Water-cooled doors and frames have been installed on all furnaces.

Use of oxygen was dropped recently by the open-hearth department but work is continuing with air as a reducing agent. The company is fortunate in having an adequate supply of lump iron ore for open-hearth use. Incidentally, as part of its housekeeping and safety program, ladles, furnace walls, etc., are regularly whitewashed, giving the shop an unusually attractive appearance.

New Soaking Pits—In February, 1948, 24 new Salem circular-type soaking pits were installed, each holding 12 ingots. These replaced 7 obsolete 4-hole pits. The additional capacity is required to provide additional steel for the 30 per cent expansion in wire-making facilities, as well as the rail mill. A new ingot buggy and ingot turner deliver ingots to the tables serving the breakdown stands. The rail mill has been modernized and yield stepped up to 79.3 per cent from 74 per cent three years ago.

Platers Convene June 27-30

PRACTICAL discussions on finishing and plating will be featured in symposiums and at a roundtable discussion during the annual convention of the American Electroplaters' Society, to be held in Milwaukee, June 27-30.

A symposium on the business of plating will include a presentation of the customer's viewpoint of plated products and statements on the availability of important plating materials. Additional symposiums will be held on copper, nickel and chromium plating and on plating and other treatments of light metals. The roundtable discussion will cover acid dips in cleaning cycles.

Included during the convention will be visits to the Milwaukee plants of Globe-Union Inc., maker of roller skates, Nash-Kelvinator Co. where Nash auto bodies are assembled, and General Electric Co.'s X-Ray Division.

Body Engineers Meet in Fall

AMERICAN Society of Body Engineers has formulated plans for the fourth annual technical convention to be held at the Rackham Memorial Bldg., Detroit, Nov. 2-4.

There will be eight technical sessions directed by speakers and engineers from the automotive industry who will outline developments and trends in auto body styling, materials and production engineering. Automotive suppliers and parts manufacturers will show their newest products and the methods used in developing them.

Billions Needed for Road Work

EXPENDITURE of $47 billion over a ten-year period at a rate double that of the dollar-record 1948 pace will be required to meet the nation's highway transportation needs, J. S. Bright, deputy commissioner, Public Roads Administration, told the American Road Builders' Association at its Southeastern State Conference last week.

The $1569 million which was spent on highway construction work in 1948 amounted only to half the sum President Truman suggested as necessary in his economic report to Congress in January of this year, he said.

Based on detailed studies, results from 17 states show that 579,010 miles, or 49 per cent of the 1,172,785 miles of highways appraised, are deficient. The deficiencies occur as follows: 55 per cent of state highway mileage, 49 per cent of county and local mileage, and 41 per cent of city streets need immediate and considerable attention.

Mr. Bright called for "a better public understanding of the ratio between cost of highways and cost of highway transportation." Such understanding, he said, "would disclose that what appears to be a saving by restricting highways expenditures is being lost through excessive vehicle operating costs resulting from an over-conservative highway program." In 1936, 1.8 mills of construction money was expended for each gross ton of traffic moving one mile whereas in 1948 it amounted to 1.7 mills per ton-mile, or less than 0.9 of a mill in terms of 1936 dollars.

A long-range, far-sighted highway construction program, announced by the various states and their subdivisions and based on federal aid of "known amounts projected several years into the future," would save taxpayers millions, Nello L. Teer Jr., president of the association's Contractors' Division, said. "With the tremendous investment they must make in machinery and equipment required for highway construction, contractors' difficulties are increased manyfold by the uncertainties of the piece-meal manner in which we have tackled the country's highway program to date," he said.

R. K. Stiles, president, Manufacturers' Division of the association, envisioned a highway program of unprecedented proportions that would help stabilize employment and simultaneously move toward compensating for wartime deterioration of the nation's roads.

Weldment Standards Proposed

AMERICAN Weldment Manufacturers Association proposed setting up manufacturing standards and liberalized its membership requirements at a recent general meeting in Chicago.

The proposed manufacturing standards and practices system consists of five service classifications established according to the service to which the weldment is to be put. These classifications are based on the quantity and quality of stresses to be encountered, such as static loading, vibration and fatigue loading. The standards would in no way circumvent or change accepted standards and codes now in effect.

All weldment manufacturers and companies interested in the industry are invited to send any suggestions on the subject of commercial standards to the association, 332 S. Michigan Ave., Chicago.

Liberalized membership requirements now permit any company that manufactures weldments as component parts of its own products, or sells weldments as spare or service parts to join the association. Formerly the group forbade membership to companies not continuously and actively engaged in selling weldments in the open market.

Stevens Institute Opens Lab

LECTURE on "The Metallurgical Economics of the Manufacture and Uses of Steel" was presented on May 12 by Harry N. McQuaid, consultant, at the Stevens Institute of Technology, Hoboken, N. J. The lecture was given in connection with the dedication exercises of the William H. Pierce Memorial Laboratory for Metallurgy.

By A. H. ALLEN

Mirrors of Motordom

Ford's 3500 major suppliers get stop orders, totaling about $4 million daily as strike closes Rouge and other plants. Walkout may affect 250,000. Hopes for output record fade

DETROIT

TELEGRAPHIC stop orders were rushed out to most of Ford's 3500 suppliers the day following the start of the Rouge plant strike, instructing them to stop all shipments but to continue fabricating through May 13 and hold such materials and parts for shipping instructions. Thus, suppliers will not feel the full impact of the interruption until this week when layoffs will be inevitable. Just how many will be idled it is difficult to estimate, for there are 6000 companies, large and small, in the Ford vendor list, of which 3500 are considered "major" sources. For most of them, the Ford account is only a part of current production although for many it is a distinctly large slice, the loss of which will be felt keenly. Ford daily purchases from outside suppliers run to $4 million, or close to $1 billion annually.

As 62,500 walked out of the Rouge and Lincoln plants at noon a week ago Thursday, they were greeted with distribution of inflammatory leaflets, Communist inspired, viciously attacking the Ford management and urging strikers to "settle on their own terms." This literature was quickly rounded up and destroyed by union flying squads and UAW leaders are making determined efforts to avoid any radical tinge to the walkout despite the fact the entire affair was motivated by left-wing elements in the Ford automobile workers local.

Ford Declines Debate — Walter Reuther, UAW-CIO president, wanted none of it from the beginning since it cut the props out from under him in planned negotiations on pension plans and social security benefits in a new Ford contract. However, once the play was taken away from him he had to go along and take an active part in settlement proceedings. He brought in his usual "grandstand" tactics—a parade of 6000 on Sunday, headed by the mayor of Dearborn who proclaimed to reporters all his sympathies were with the strikers, a demand that Henry Ford II personally sit in on discussions aimed at ending the walkout, a proposal that Mr. Ford debate the issues with him before massed Ford workers in 56,000-seat Briggs Stadium, etc.

Mr. Ford and others in his management team have shown no bitterness, although declining the debate invitation on the grounds it would accomplish nothing. A spirit of cordiality seems to be reflected from both sides of the dispute, in fact, contrasting with past labor arguments in the automotive industry.

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

	1949	1948
January	445,092	422,236
February	443,734	399,471
March	543,711	519,154
April	563,300*	462,323
May		359,996
June		454,401
July		489,736
August		478,186
September		437,181
October		516,814
November		495,488
December		514,337
12 mos.		5,549,323

* Preliminary.

Estimate for week ended:

	1949	(Same week) 1948
April. 23	141,227	107,093
April. 30	136,433	102,967
May 7	128,385	84,684
May 14	115,000	83,275

Estimated by Ward's Automotive Reports

All salaried employees are permitted to go to their jobs, the union furnishing arm bands labeled "O.K. to Work" for everyone requiring entrance through plant gates.

Maintenance personnel is keeping blast furnaces banked, the heat remains on open hearths, gas jets are preventing coke ovens from cooling, the power house continues to operate, glass furnaces are kept hot. Rigid picketing instructions have been issued to strikers, requiring all to serve on picket lines a minimum of four hours a day or face suspension from the union. Members can obtain permission to work in other plants during the strike only by application to a "strike strategy committee" and then must contribute one day's pay each week to the strike fund.

Issue Trivial—Basically, the strike was senseless from a strategy standpoint, since the only thing the union can possibly gain is an adjustment of the final assembly line speed in "B" Building of the Rouge plant where 2300 are employed. Production here had been scheduled at about 340 cars daily or 1700 per week, compared with overall national output of 17,000 Ford cars, 5200 trucks, 4400 Mercurys and 600 Lincolns. In other words, at issue was only 6.3 per cent of the company's entire production. Complaints arose from the fact that when materials shortages, breakdowns, "skipped" positions on the line or other interruptions occurred, it was the policy to increase the speed of the line to make up for the lost time, so that the daily schedule could be made. The company maintained the line was 11 per cent overmanned for the week ended Apr. 23, on the basis of established production standards, and the union countered with the charge that increases in the line speed beyond the normal travel were "inhuman," although it refused to allow an impartial technical arbiter to review the situation.

The strike was only a few days old when groups of employees in other departments—the axle plant, for example—decided they, too, were being "speeded-up" and demanded action to slow operations.

Lag to Follow Settlement — Paralysis of the Ford empire was quick to develop and prospects pointed to a complete tieup by May 20 if the strike continued. Even if the dispute should be settled quickly a lag of several weeks would be unavoidable in restoring full operations. Plants in nine cities—Atlanta, Buffalo, Chester, Pa., Chicago, Edgewater, N. J., Kansas City, Memphis, Louisville and St. Paul—employing better than 12,000, went down last Tuesday. Others were due to follow directly with 147,000 eventually out of work if all outlying units are forced to close.

The Michigan Unemployment Compensation Commission estimated 25,000 in suppliers' plants in Michi-

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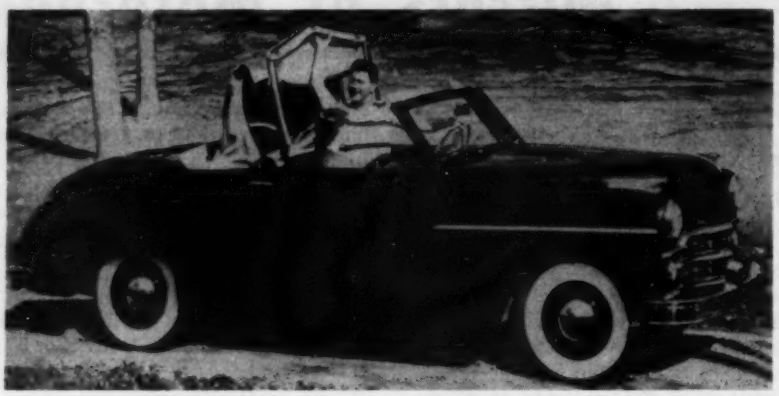


WAYFARER: New lower-price Dodge roadster, with manually operated top, is in production. Suggested factory retail price is $1635 plus taxes. Car has fluid drive and plastic side windows which slide into sockets in the doors. NEA photo

gan alone would be laid off because of the Ford walkout. It appears likely a grand total of 250,000 ultimately might be affected throughout the country. Also to be taken into consideration are the 7200 Ford dealers and their 100,000 employees who have a total of around 15,000 new cars to dispose of and their showrooms will be empty.

No interruption to normal pay procedures for hourly rated employees has been caused by the Ford plant closing.

Unrest Affects Many Plants — A flurry of slowdowns and protests over speedups has broken out all over the automotive industry, with the exception of General Motors plants, and there were hints of trouble at Chevrolet last week. A slowdown at Motor Products Co. shut off ventilator windows from Chrysler plants and forced 22,000 to be sent home until further notice from Chrysler, Dodge and DeSoto Divisions. A work stoppage at L. A. Young Spring & Wire Corp. carried further implications of disrupting assembly operations.

Indications are that many parts company managements, in tightening up on costs because of pressure from car manufacturers, are insisting on maintenance of full work standards. This is immediately seized upon by union members as an excuse for stalling on the job, usually leading to the dismissal of a handful of the key dissenters. Once this has been done, others simply walk off the job in sympathy, or cook up other fancied grievances for stopping work.

Blast Hopes for New Record—Beyond that, hopes for a new quarterly high in car and truck output are going aglimmering. April started off well and wound up with around 565,000 units. May would have equaled this or surpassed it, except for the current wave of strikes and petty bickering over working conditions and standards. Better than 2,000,000 units have been built in four months of this year, and labor holds the answer as to whether the first half will wind up with 3,000,000 completed. The materials are there, the equipment is available, the will to work is not.

Attention Given Waste Disposal

CONCENTRATED attention is being given to disposal of industrial wastes —gaseous, solid and liquid—by the motor companies. General Motors has a major program under way, with L. A. Danse, supervisor of materials and processes, supervising. Ford has planned installations for completion this year amounting to better than $1.5 million, at the Rouge plant alone. Industries are co-operating with the Michigan stream control commission in the work.

Major units at Ford include an oil skimmer to remove waste oil from mill water leaving the plant (extension of a system started many years ago), facilities to dispose of waste steel pickling liquor and a new system for elimination of coke oven wastes. Steel pans and cement curbs have been installed under 615 machines throughout the plant for collection and elimination of waste oil resulting from leaks and spills.

Steel pickling liquor is being used as a sewage sludge conditioning agent at plants in both Dearborn and Detroit, while several hundred thousand dollars has been approved for construction of a recirculating system to handle final cooler waters at Ford coke ovens. Scheduled for operation by fall, this is said to be the first installation of its kind in the country.

At Ford's Ypsilanti plant, correction of plating solution problems has been achieved by piping wastes to the city sewer system where they are diluted with the large volume of sanitary sewage and treated at a municipal plant.

Diaphragm-Type Fuel Pump

DIAPHRAGM-TYPE fuel pump for passenger cars, trucks and industrial uses, having greater delivery capacity than other pumps of the same size, now is in limited production by the F. L. Jacobs Co. here after several years of tests and use in Chrysler taxicabs. The pump uses a single soft-type valve of synthetic rubber for both inlet and outlet sides, instead of the two or more hard-type valves used on conventional designs. In addition, it has two large equalizing domes on either side, tending to maintain a more even and constant flow of fuel.

Chevrolet Buys Saginaw Plant

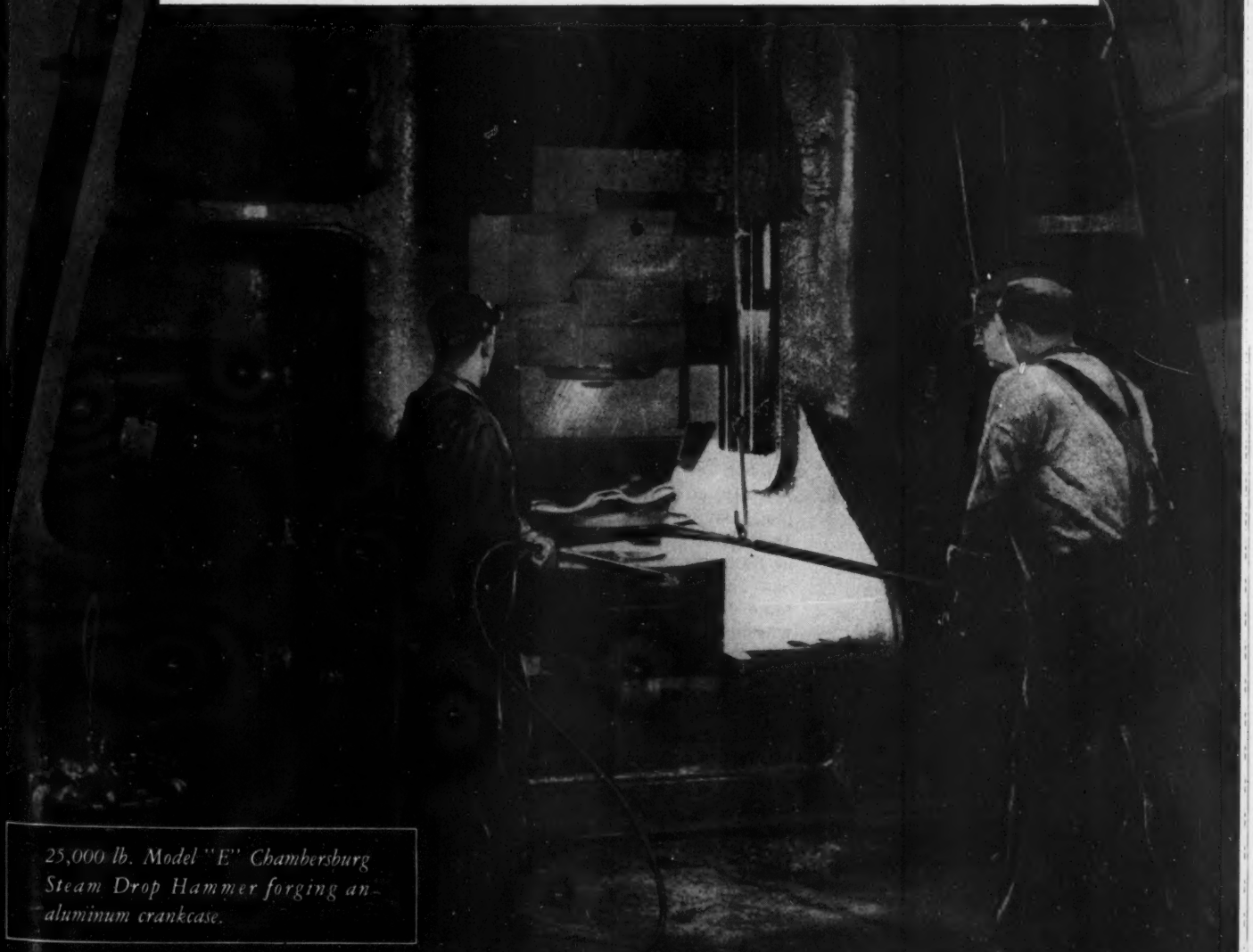
CHEVROLET has purchased a government-built plant at Saginaw, Mich., in which aircraft aluminum forgings were produced during the war. Purchase price was $1.3 million and the facility has been operated under lease since 1947 as an adjunct to the division's transmission plant. At one time it was thought Chevrolet would build its forthcoming automatic transmission at Saginaw, but later indications point to Cleveland as the likely source for these units. Chevrolet, incidentally, after turning out 135,026 cars and trucks in April, regained its position as the leading manufacturer for both types of vehicles, after temporarily taking second place to Ford because of the model change early this year. The division accounted for 53.3 per cent of all General Motors production in April, and GM's total, 251,363, was 44.6 per cent of the entire industry production, United States and Canada.

Establish New Brake Sources

NASH, Hudson, and Kaiser-Frazer have been able to resume production after arranging for new manufacturing facilities for brake parts, cut off by the long strike at Bendix Aviation. Dies were removed from Bendix plants and set up elsewhere, with Wagner Electric Co. offering further assistance in re-establishing the flow of brake components. Packard is expected to follow suit, after first planning to sit out the Bendix trouble.

CHAMBERSBURG

The performance of the world's most efficient drop hammer—the Chambersburg Model "E"—rests squarely on scientific engineering checked by a half-century of forge shop experience.



25,000 lb. Model "E" Chambersburg Steam Drop Hammer forging an aluminum crankcase.

CHAMBERSBURG ENGINEERING CO. CHAMBERSBURG CHAMBERSBURG, PA.

Harnischfeger Expands

Completes warehouse, office in Teterboro, N. J., to extend its service facilities in the East

HARNISCHFEGER Corp., Milwaukee, Wis., has completed construction of a new warehouse and office building in Teterboro, N. J., to extend its service facilities in eastern states. The new building comprises more than 14,000 square feet of floor space and is located on an 8½-acre site, with parking space to accommodate more than 400 cars. It is within 16 miles of New York city. Austin Co., Chicago, handled both design and construction of the building, which is of a permanent masonry type, with the office projection finished in face brick.

Harnischfeger Corp., which was established in 1884 and was originally known as the Pawling & Harnischfeger Corp., builds cranes, electric hoists, power draglines and shovels and similar equipment; also builds road building machinery and manufactures electric arc welders, ranging from the small 1-man shop units to units used by large firms.

Form Vacuum Casting Firm

DEVELOPMENT and nationwide licensing of a process for refining and casting metals in vacuum will be handled by a newly formed firm, Vacuum Casting Corp., Philadelphia. President of the new company is Frederic O. Hess, president of Selas Corp. of America; Rawson L. Woond, president of Arwood Precision Casting Corp., is treasurer; and E. Wellford Mason is secretary.

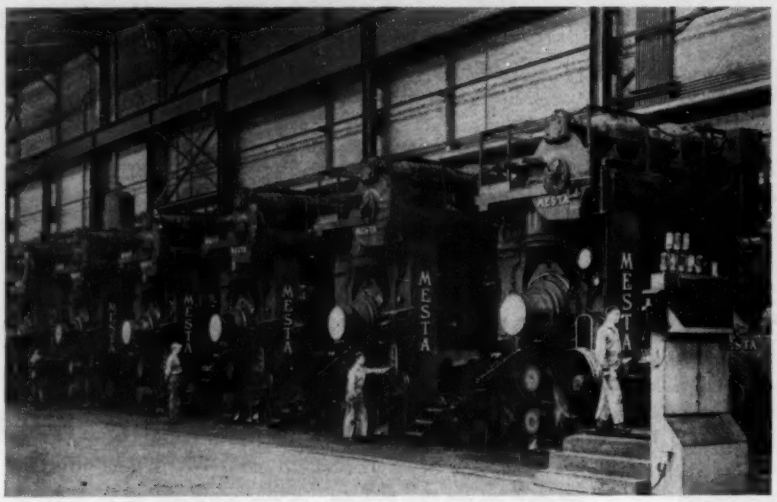
Davidlee von Ludwig, inventor of the process which is applicable to the manufacture of aircraft and gas turbines, ordnance parts, steel ingots and other metal products, has been appointed director of research for the corporation. According to Mr. von Ludwig, the process prevents contamination of a metal from air and gases during casting, thereby eliminating drosses and other impurities.

First license on the process has been granted to Arwood Precision Casting Corp., Brooklyn, N. Y.

Canadian Pipe Line Projected

ORDERS exceeding $9 million for steel plate for fabrication into high-strength pipe and for other equipment have been placed with Canadian firms, Imperial Oil Ltd. has announced. The material is for the Inter-provincial Pipe Line Co.'s projected line between Edmonton, Alta., and Regina, Sask.

Roughly 67,000 tons of special steel plate were ordered from Steel Co. of Canada Ltd. which will make the steel and roll it into plate. The order represents about 10 per cent of the company's annual ingot capacity and will take a year to complete. Page-Hersey Tubes Ltd. will fabricate the plate into 457 miles of pipe 16 inches in diameter at its Welland, Ont., plant. The Edmonton-Regina line is expected to be completed by the end of 1950.



NEWEST HOT-STRIP MILL: Visiting engineers at the annual spring conference sponsored by the rolling mill committee of the Association of Iron & Steel Engineers were intrigued by the operation of this recently installed 68-inch continuous hot-strip mill at the Sparrows Point plant of Bethlehem Steel Co. where an inspection trip was held on May 3

Chicago Freight Terminal Planned

A HUGE freight terminal, capable at the outset of handling an estimated volume of 1 million tons of merchandise a year, is being developed by a new Chicago company, Calumet Harbor Terminals Inc.

Initial step in the program was the purchase on May 2 of an improved 38-acre tract located at the mouth of Lake Calumet on Chicago's southeast side. The site, designated as Calumet Harbor Yards, contains several warehouse and shop buildings erected by the government during the war and operated at that time by Pullman-Standard Car Mfg. Co. for production of naval vessels. Purchase of the land from Pullman-Standard and the buildings from War Assets Administration involved $350,000.

The facility's final conversion to freight warehousing and trans-shipping will cost an additional $2 million.

Principals in the new company are Roy C. Griswold, chairman, A.S.H. Bender, president, and H. M. Holder, treasurer.

Bell Drops Acquisition Plan

BELL Aircraft Corp., Buffalo, has cancelled its proposed plan to acquire controlling interests in American Wheelabrator & Equipment Co., Mishawaka, Ind., and Baker Refrigeration Corp., South Windham, Me., and Omaha, Nebr.

When application was made to the SEC some time ago, President Lawrence D. Bell said in a letter to stockholders, it was believed "the proposal had potentialities for benefit to the company."

"Since that time," he said, "there has been widespread deterioration in business, and the immediate future for industrial companies has been rendered less attractive, while Bell's business which is largely military probably will be less affected by the possible continuation of the present business recession."

Carnegie Modernizes Cold Mill

MODERNIZATION of a three-stand cold reduction mill for Carnegie-Illinois Steel Corp. at the Gary, Ind., sheet and tin mill has been completed by F. H. McGraw & Co., engineer and contractor.

Modernization of the three-stand, which consisted mostly of electrical, mechanical and piping work, got underway late in March and required a 45-day shutdown of the mill's operations. The job was completed ahead of schedule.

Briefs . . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

Winfield H. Smith Corp., Springville, N. Y., has reduced prices on all models and sizes of its worm gear, differential and helical speed reducers.

—o—

Allied Products Corp., Detroit, will soon move its Victor-Peninsular Division, where its special cold-forged parts and high-carbon hexagon head cap screws are manufactured, into a new plant at 12677 Burt Rd., Detroit.

—o—

SKF Industries Inc., Philadelphia, has begun a voluntary management-development program, designed to encourage supervisory personnel to broaden their technical knowledge, in plants at Shippensburg, Pa., and Hornell, N. Y. The program consists of a wide range of technical and personnel management courses.

—o—

J. E. Baker Co., York, Pa., producer of stone products, is celebrating its 60th anniversary.

—o—

Western Gear Works is producing a new line of products, high speed printing presses, at its Lynwood, Calif., plant.

—o—

Hill-Chase Steel Co., Baltimore, steel warehousing firm, has opened a branch office in Richmond, Va. C. A. Hummel is in charge.

—o—

Hewitt Rubber Division, Hewitt-Robins Inc., Buffalo, has appointed Bornell Supply Co. Inc., Piqua, O., as distributor of industrial rubber products in the Piqua territory.

—o—

Office of International Trade, Department of Commerce, summarizes the current exchange situation in 13 Latin American countries in a new leaflet just issued. Copies may be obtained from Department of Commerce, Washington 25, D. C., or from Commerce field offices.

—o—

Standard Oil Co. (New Jersey), New York, reports that its fifth supertanker, *SS Esso Cristobal,* has been launched at Newport News, Va. The 12,500-hp vessel is powered by General Electric geared turbines. Tanker is scheduled for delivery in July.

—o—

Hydro-line Mfg. Co., Rockford, Ill., maker of air and hydraulic cylinders and special machinery, has named Leaser Engineering Co., La-Porte, Ind., as sales representative for northern Indiana and the south side of Chicago, and Euclid Machine & Sales Co., Cleveland, as agent for northern Ohio.

—o—

War Assets Administration will sell a 100-mile natural gas pipeline in Louisiana to A. B. Harper, Ft. Smith, Ark., and associates for $5,257,000. The line, now being operated for the government by Union Sulphur Co., starts near Lake Charles, La., and extends to the Louisiana communities of Woodlawn, North Tepetate, Lakeside and Chalkley.

—o—

Metal Textile Corp., Roselle, N. J., will manufacture steel and asbestos heat insulating blankets for jet aircraft engines in a newly acquired plant at Culver City, Calif. Company has opened another branch in Hamilton, Ont.

—o—

Aurora Metal Co., Aurora, Ill., producer of aluminum bronze and silicon bronze vacuum die castings, has named Erickson Sales Inc., Dayton, O., as sales engineering representative in southern Ohio and southeastern Indiana, and Egelhoff Metal Sales Inc., St. Louis, as agent in southern Illinois, Missouri, Kansas, southeastern Iowa and Evansville, Ind.

—o—

American Car & Foundry Co., New York, delivered 3249 freight cars for domestic service in April, the most shipments by any carbuilder since March, 1925.

—o—

Southern Research Institute, Birmingham, signed contracts for 20 research projects involving a total volume of $184,460 during the first quarter of 1949.

—o—

AC Spark Plug Division, General Motors Corp., Detroit, has received a $1,454,000 order from the U. S. Air Force. The current order, largest ever placed in peacetime by the Air Force, is the third large order placed with the division since last September.

—o—

Kieley & Mueller Inc., North Bergen, N. J., manufacturer of industrial control equipment, has named Van Hala Industrial Sales Co., Cleveland, to handle its line of control equipment in the Cleveland area.

—o—

Morse Chain Co., Detroit, subsidiary of Borg-Warner Corp., has added an all rubber center coupling designed for improved power transmission in fractional horsepower motors. Called the "Mighty Midget," the new center member is made of neoprene to give long life and to eliminate noise and vibration.

—o—

Stainless Steel Sales Corp., Philadelphia, distributor of stainless steel products, has moved its sales office and warehouse to a new location at 500 N. 12th St.

—o—

Iron & Steel Products Inc., Chicago, dealer in railway equipment, machinery, etc., has moved its New York office to new quarters at 50 Church St.

—o—

Babcock & Wilcox Co., New York, announces that the Navy's newest heavy cruiser, the *U. S. S. Salem,* is equipped with B & W boilers built at the company's Barberton, O., plant.

—o—

United States Steel Supply Co., Chicago, U. S. Steel Corp. subsidiary, held an open house at its new Cleveland warehouse for employees and their families on May 7.

—o—

Northrop Aircraft Inc., Hawthorne, Calif., has entered into a privately negotiated licensing agreement to permit Canadair Ltd., Electric Boat Co. subsidiary, to manufacture and sell its three-engined Raider airplane, a military assault transport.

—o—

Diversey Corp., Chicago, manufacturer of industrial chemicals and cleaning compounds, has purchased all common stock of General Reduction Co., Macon, Ga. Charles E. Glasser, treasurer of the parent company, has been elected president of the subsidiary.

—o—

Jenkins Brothers, manufacturer of bronze, iron and steel valves, will move its headquarters from 80 White St., New York, to 100 Park Ave., New York, when the new office building under construction there is completed. Jenkins' plant is in Bridgeport, Conn.

—o—

War Assets Administration has leased two facilities at Rockford, Ill., where special tools were manufactured during the war, to W. F. & John Barnes Co. and Metal Cutting Tools Inc., a subsidiary, the wartime operators. The leases are for ten years with options to purchase.

—o—

Joseph Behr & Sons Inc., Rockford, Ill., dealer in new and used machinery and industrial equipment, will hold its third annual open house May 25-26.

The Business Trend

DESPITE an unmistakable softening in demand for all items, the pitch of industrial activity in the week ended May 7 was still high with STEEL's industrial production index for the week at 172 per cent of the 1936-1939 average. The figure for the latest week was down 2 points from the revised total for the preceding week but 14 points higher than in the same week a year ago.

AUTOMOBILES—Increasing labor unrest culminating in a number of strikes at plants of both components suppliers and automobile builders is currently plaguing the industry just as materials shortages did a year ago. Production in the week ended May 7 dropped to 128,385 passenger cars and trucks from 136,433 in the preceding week with a strike at one of the Big Three and suppliers' strikes causing the decline. Up to May 7, U. S. plants had built an estimated 1,597,884 cars and 460,325 trucks, while Canadian plants added 51,658 cars and 34,489 trucks. These figures represent a gain of 300,000 cars over the like 1948 period but a drop of 55,500 trucks in U. S. plants.

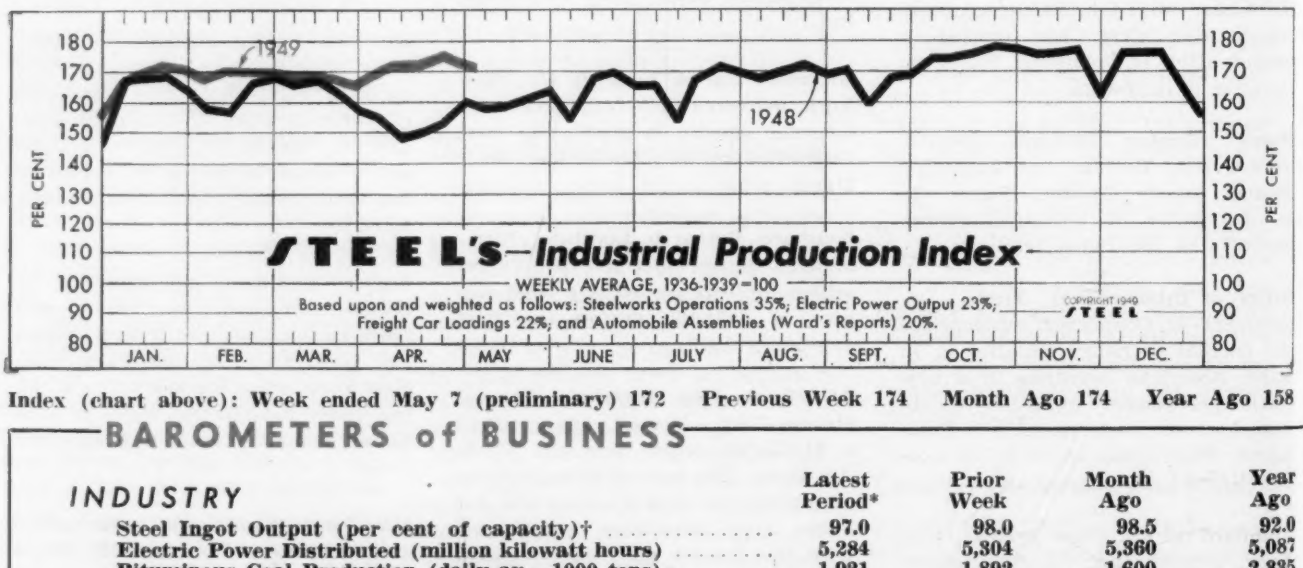
COAL—Bituminous coal stocks dropped to 60.5 million net tons on Apr. 1 from 68.8 million tons on Mar. 1 as the result of the 2-week long miners' walkout, according the Bureau of Mines. Consumption during the month totaled 44.3 million tons, up 4.9 per cent from February.

POWER—Sales to ultimate customers totaled about 21.1 billion kwhr in February, compared with 21.8 billion kwhr in January and 19.9 billion kwhr in February, 1948. Comparisons by the Edison Electric Institute show that while February sales increased by 6.2 per cent over the corresponding month last year, revenues increased 8.8 per cent.

FREIGHT CARS—Domestic freight car deliveries totaled 10,587 in April, down 1323 from the March total of 11,910. The American Railway Car Institute reports that of the total 8499 were built by the car building companies and 2088 by railroad shops. Only 30 new car orders were placed during April with the result that the backlog of orders on May 1 has faded to 62,569, compared with 73,188 on Apr. 1 and 134,676 on May 1 a year ago.

CONSTRUCTION—Heavy engineering construction averaged $147 million weekly in April, 1 per cent under the March average and 5 per cent less than the weekly average in April, 1948. Contract awards for the first four months of this year aggregate $2.5 billion and the weekly average is 18 per cent above the average in the comparable period last year.

PRICES—A further decline of 0.6 per cent in average primary market prices in the week ended May 3 brought the wholesale price index of the Bureau of Labor Statistics down to 155.2 per cent of the 1926 average. At this point the index is 1.8 per cent lower than four weeks earlier and 4.2 per cent below the comparable week a year ago. Metals and metal products price index also continued to slip during the week to 169.3 per cent of the 1926 average.



Index (chart above): Week ended May 7 (preliminary) 172 Previous Week 174 Month Ago 174 Year Ago 158

BAROMETERS of BUSINESS

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)†	97.0	98.0	98.5	92.0
Electric Power Distributed (million kilowatt hours)	5,284	5,304	5,360	5,087
Bituminous Coal Production (daily av.—1000 tons)	1,921	1,892	1,600	2,335
Petroleum Production (daily av.—1000 bbl)	4,897	4,922	4,916	5,413
Construction Volume (ENR—Unit $1,000,000)	$129.3	$145.9	$178.2	$113.3
Automobile and Truck Output (Ward's—number units)	128,385	136,433	131,970	84,684

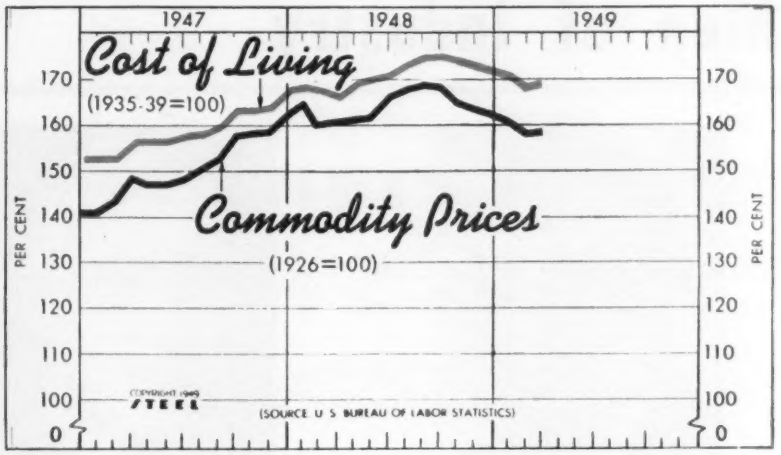
* Dates on request. † 1949 weekly capacity is 1,843,516 net tons. 1948 weekly capacity was 1,802,476 net tons.

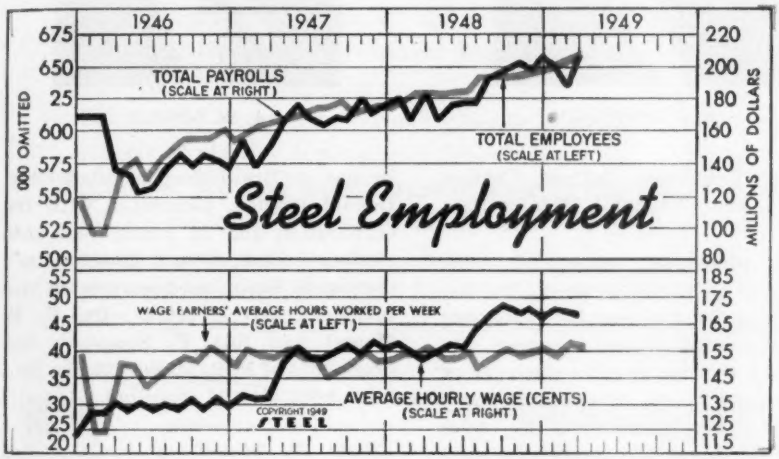
TRADE				
Freight Carloadings (unit—1000 cars)	790†	785	758	881
Business Failures (Dun & Bradstreet, number)	193	204	230	108
Money in Circulation (in millions of dollars)‡	$27,447	$27,356	$27,514	$27,762
Department Store Sales (changes from like wk. a yr. ago)‡	−4%	−10%	+7%	+7%

† Preliminary. ‡ Federal Reserve Board.

Wholesale Commodity Price—Cost of Living Indexes

	—Commodities— (1926=100)			—Living Cost— (1935-39=100)		
	1949	1948	1947	1949	1948	1947
Jan.	160.6	165.7	141.5	170.9	168.8	153.3
Feb.	158.1	160.8	144.5	169.0	167.5	153.2
Mar.	158.4	161.4	149.5	169.5	166.9	156.3
Apr.	....	162.7	147.7	....	169.3	156.2
May	....	163.9	147.1	....	170.5	156.0
June	....	166.2	148.0	....	171.7	157.1
July	....	168.7	150.8	....	173.7	158.4
Aug.	....	169.5	153.7	....	174.5	160.3
Sept.	....	168.7	157.4	....	174.5	163.8
Oct.	....	165.2	158.5	....	173.6	163.8
Nov.	....	164.0	159.6	....	172.2	164.9
Dec.	....	162.3	163.2	....	171.4	167.0
Ave.	....	164.9	151.8	....	171.2	159.2





Steel Employment

	Employees† (000)		Total Payrolls (millions)		Hourly Wages† (cents)	
	1949	1948	1949	1948	1949	1948
Jan.	650	622	$202.1	$180.2	171.3	157.3
Feb.	653	626	189.8	167.6	169.6	155.1
Mar.	652	629	207.2	183.0	168.5	154.8
Apr.	...	626	....	168.5	....	155.1
May	...	628	....	175.3	....	157.7
June	...	634	....	179.5	....	156.9
July	...	641	....	179.8	....	164.5
Aug.	...	645	....	193.8	....	168.9
Sept.	...	641	....	199.4	....	171.8
Oct.	...	644	....	201.7	....	169.9
Nov.	...	646	....	199.8	....	172.1
Dec.	...	648	....	205.8	....	169.4

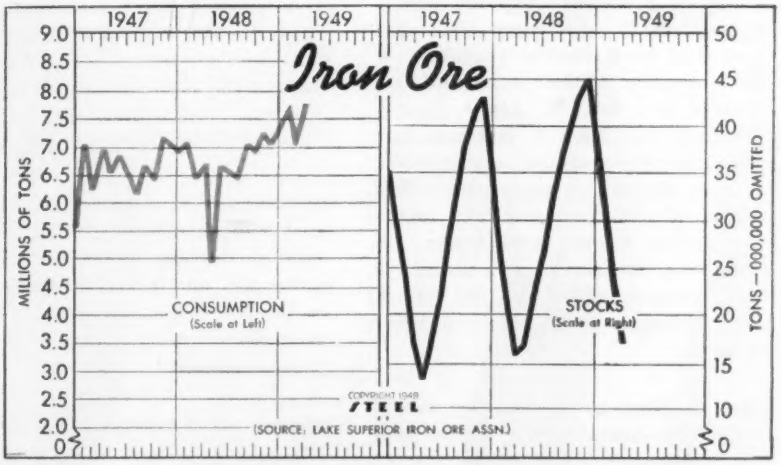
† Monthly average.

Iron Ore

(Lake Superior Iron Ore Assn.)

Gross tons—000 omitted

	Consumption		Stocks at Lake Erie Docks and Furnaces	
	1949	1948	1949	1948
Jan.	7,590	7,057	31,904	29,081
Feb.	6,992	6,440	24,981	22,628
Mar.	7,735	6,634	17,308	16,022
Apr.	....	4,976	.....	17,125
May	....	6,656	.....	22,058
June	....	6,577	.....	26,965
July	....	6,479	.....	32,611
Aug.	....	7,036	.....	37,081
Sept.	....	6,965	.....	40,923
Oct.	....	7,273	.....	43,883
Nov.	....	7,058	.....	45,160
Dec.	....	7,351	.....	39,460
Total	....	80,504		



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$13,907	$12,685	$13,583	$13,508
Federal Gross Debt (billions)	$251.6	$251.4	$251.5	$252.1
Bond Volume, NYSE (millions)	$14.1	$15.1	$16.9	$22.2
Stocks Sales, NYSE (thousands)	4,693	4,332	4,834	7,463
Loans and Investments (billions)†	$61.3	$61.3	$61.2	$62.9
United States Gov't. Obligations Held (millions)†	$32,951	$32,765	$31,750	$35,475

† Member banks, Federal Reserve System.

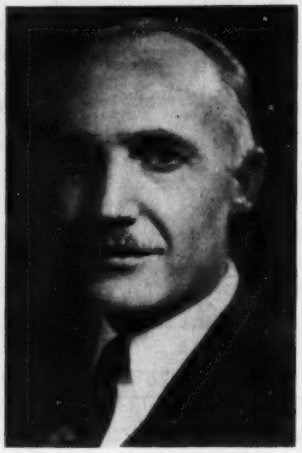
PRICES

STEEL's Composite Finished Steel Price Average	$93.55	$94.45	$94.91	$80.27
STEEL's Nonferrous Metal Composite‡	188.1	193.2	209.4	196.6
All Commodities†	155.2	156.1	158.0	162.0
Metals and Metal Products†	169.3	170.5	174.0	156.7

† Bureau of Labor Statistics Index, 1926=100. ‡ 1936-1939=100.

Men of Industry

FRANK R. S. KAPLAN



A. J. FITZGERALD

A. W. SCHULTZ

Frank R. S. Kaplan, who helped organize Copperweld Steel Co. in Glassport, Pa., in 1915, has been elected president of the company. He succeeds the late **S. Eugene Bramer.** Mr. Kaplan was named acting president in April of this year. He previously served as vice president, secretary and general counsel.

—o—

John H. Leslie, vice president in charge of research and engineering, Signode Steel Strapping Co., Chicago, has been elected president of the company. Other executive changes are: **John W. Leslie,** former president, and **John S. Gorman,** former first vice president and director of sales, elected to newly established offices of chairman and vice chairman of the board, respectively. **Joseph Pois,** treasurer, was elected a vice president, and **J. M. Moon,** sales manager, promoted to director of sales.

—o—

John W. Humphrey, formerly executive vice president, Philip Carey Mfg. Co., Cincinnati, has been elected president of the company, succeeding **Robert S. King,** who became chairman of the board. Mr. King succeeds **George A. Rentschler,** who continues as chairman of the company's executive committee. Mr. Humphrey joined the company in 1948, having previously been identified with General Motors Corp., National Cash Register and International Telephone & Telegraph Corp. He formed his own management consulting business in 1947, and later went with I. T. & T. on a consulting basis. In addition to being a director of Philip Carey Mfg. Co., Mr. Humphrey also is a director of Buckeye Tool Corp., Dayton, O., Chesley Industries, Detroit, Crosley Motors, and Cincinnati Metalcrafts.

—o—

A. J. Fitzgerald, associated with Cleveland Punch & Shear Works Co., Cleveland, for the past 30 years, has been appointed general manager. He has been serving as sales manager of the company. **A. W. Schultz,** who succeeds Mr. Fitzgerald as sales manager, joined the company's engineering staff after graduation from Case Institute of Technology, and later left to associate in sales and engineering with various machine tool builders. He returned to Cleveland Punch & Shear Works a year ago.

—o—

G. F. Clipsham, assistant to the president, Lincoln Electric Co., Cleveland, **William Irrgang,** director of plant engineering, and **L. K. Stringham,** director of welding development, have been elected to the board of directors of the company.

—o—

Tinnerman Products Inc., Cleveland, has opened a new sales branch office in Kalamazoo, Mich., which is managed by **Harry J. Greer.** He will operate in co-operation with the Detroit district office.

—o—

Laurence C. Johnston has been appointed district sales manager with headquarters in New York for Brown Fintube Co., Elyria, O. Engaged in the heat transfer field for the past 15 years, Mr. Johnston had previous association with Process Engineering Inc., Boston, and Patterson-Kelley Co. Inc., E. Stroudsburg, Pa.

—o—

Charles E. Schley has been elected chairman of the board of Philadelphia Bronze & Brass Corp., Philadelphia. **Donald Bryden,** associated with the corporation for 22 years, has been elected president and director, and **Gordon E. Keim** has been elected vice president and director. **Dr. F. R. Hensel** and **Ray F. Sparrow,** vice presidents of P. R. Mallory & Co. Inc., have been elected directors.

—o—

Ellery W. Stone has been elected president, and **David R. Hull,** executive vice president of Capehart-Farnsworth Corp., newly formed and wholly owned subsidiary of International Telephone & Telegraph Corp., New York. The following officers also were elected: **Philo T. Farnsworth,** vice president; **Henry C. Roemer,** vice president; **William Clausen,** vice president; **P. H. Hartmann,** treasurer; **W. F. Hoeppner,** comptroller; **Chester H. Wiggin,** secretary and assistant treasurer; **Dudley M. Day,** assistant secretary; **Edmond H. Dufau,** assistant treasurer; and **Roy H. Workman,** assistant comptroller. **Edwin A. Nicholas,** former president of Farnsworth Television & Radio Corp., will act as assistant to the president.

—o—

Charles L. Wooldridge Jr. has been appointed manager of sales training, United States Steel Corp., Pittsburgh. Before joining the corporation in 1946 as a staff assistant to the vice president of sales, Mr. Wooldridge served 11 years with Jam Handy Organization in New York and Detroit.

—o—

R. G. Kollar has been appointed manager, Radiant Baseboard Division, United States Radiator Corp., Detroit. He formerly represented

16 PUSH-ON TYPE SPEED NUTS PRODUCE 30% Savings

FOR NATIONAL SCIENTIFIC PRODUCTS CO.

Chicago, Illinois

"The 30% cost-saving effected by SPEED NUTS helps keep our prices down and sales up," says Mr. E. L. Hoffman, of National Scientific Products Co.

"Since our junior-size vacuum cleaner is made largely of plastics, it presents a difficult assembly problem. We have found Push-On Type SPEED NUTS the only fast, economical, sure way to fasten plastic parts together. They can be quickly zipped over molded studs and they lock securely by 'biting' into the plastic material. Furthermore, they provide a production cost-savings of 30% over other methods considered!"

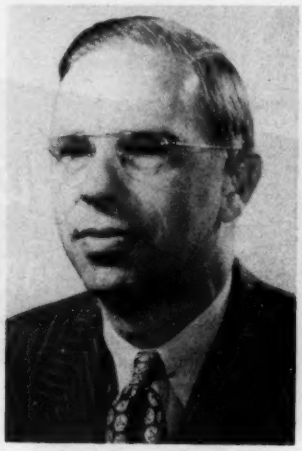
If this method of assembly suggests a cost-saving, product-improving idea to you, call on us for immediate service. You may discover many profitable ideas incorporating the SPEED NUT brand of fasteners. The complete line includes more than 4000 shapes and sizes. TINNERMAN PRODUCTS, INC., 2040 Fulton Road, Cleveland 13, Ohio. Offices in principal cities. In Canada: Dominion Fasteners Limited, Hamilton.

Specially-molded clear plastic cleaner reveals 8 of the 16 Push-On type SPEED NUTS in position (red circles) on plastic studs. Simple tool is used to zip on SPEED NUTS.

The "Tidy Miss" toy vacuum cleaner has a powerful midget motor which is held in position by SPEED NUTS that won't vibrate loose.

L. W. GRAASKAMP

CLAYTON E. SCHOLES



HERBERT D. RATHBUN

Trundle Engineering Co., management engineer, in the Michigan area. He will be in charge of sales, production and engineering for the division.

—o—

L. W. Graaskamp, general manager of sales, American Can Co., New York, with which he has been associated for nearly 30 years, has been named vice president in charge of sales. He succeeds **W. C. Stolk,** recently elected executive vice president. Mr. Graaskamp will direct all sales activities in the United States, Canada and Hawaii.

—o—

Manderscheid Co., Chicago, announces appointment of **Clay Sayers** to represent it in Indiana and western Michigan.

—o—

Republic Steel Corp. announces appointment of two assistant superintendents of the electrical department of its Cleveland district: **Irvin W. Gray** was named assistant electrical superintendent for the 98-in. strip mill, and **Benjamin T. Beasley Jr.** was named assistant electrical superintendent for the steel plant other than the 98-in. mill.

—o—

Ernest E. Graham has been appointed sales representative for Cooper Alloy Foundry Co., Hillside, N. J., and will maintain headquarters in Houston. Mr. Graham, of Ernest E. Graham & Co., Houston, manufacturer's representative, is presently representing Erie Forge, Boston Woven Hose & Rubber, and Strom Steel Ball.

—o—

Ernest G. Unrath has been appointed works manager of the Ambridge plant of Spang-Chalfant Division, National Supply Co., Pittsburgh. He was formerly general superintendent of the plant. **S. H. Kilmer,** former superintendent of inspection at Ambridge, was appointed general superintendent to succeed Mr. Unrath.

—o—

Clayton E. Scholes has been appointed general manager of the new Osco Steel Division in Detroit of Ohio Stainless & Commercial Steel Co., Cleveland. The Cleveland company has established a new warehouse at 6970 W. Jefferson Ave. to handle carbon and alloy steel bars, steel sheets and copper and brass products. **Nate A. Wade** has been appointed assistant manager and **Owen W. Brock,** warehouse manager. Mr. Scholes joined the company in 1945 following discharge from the Army Air Force. Mr. Wade has been associated with the warehouse business in Detroit for the past 35 years, and Mr. Brock has been with Edgar T. Ward's Sons Co. since 1932.

—o—

Magnesium Association announces appointment of new officers for 1949-1950 as follows: **A. W. Winston,** Dow Chemical Co., president; **H. B. Megill,** Dominion Magnesium Ltd., Canada, vice president; **R. D. Ferguson,** Bendix Aviation Corp., Eclipse-Pioneer Division, treasurer.

—o—

William W. Dulmage, director of the power department of Ford Motor Co., Dearborn, Mich., for 30 years, has been appointed power consultant for the company, and is succeeded in the former position by his son, **Roland W. Dulmage.** The younger Mr. Dulmage, appointed manager of the power department, Rouge Division, has been associated with Ford for 29 years.

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John W. Rogers has been appointed sales manager of Wean Equipment Corp., Cleveland.

—o—

C. F. Bonnet has been appointed production manager, Industrial Chemical Division, American Cyanamid Co., New York, and **G. W. Russell** as assistant sales manager, same division.

—o—

Herbert D. Rathbun has been appointed secretary and treasurer of John A. Roebling's Sons Co., Trenton, N. J. He succeeds **Archibald W. Brown** to the latter position. Mr. Brown recently retired after 47 years' service, but continues as a member of the board of directors. **Clarence W. Snyder** has been appointed comptroller and assistant secretary of the company, and **H. Russell Brown** as assistant treasurer and assistant secretary.

—o—

Arthur F. Dallia, purchasing agent, Justrite Mfg. Co., Chicago, was elected president of the Purchasing Agents Association of Chicago. **Walter Armstrong,** American National Bank & Trust Co., Chicago, was elected first vice president, and **Robert A. Doyle,** Glidden Co., second vice president. Re-elected secretary and treasurer, respectively, are **L. R. Seen,** Borg-Warner Corp., and **Harry H. Wise,** Scovill Mfg. Co.

—o—

Robert E. Hospes, engineer with Aluminum Seal Co. Inc., Pittsburgh, since 1945, and of the parent company, Aluminum Co. of America, since 1942, has been named assistant chief chemist at Alseco's new headquarters in Richmond, Ind.

—o—

Schultz Die Casting Co., Toledo, O., announces election of **J. A. Zapf** as chairman of the board, **R. A. Luedtke** as president and general manager, and **R. A. Emch** as vice president and treasurer.

—o—

Charles W. Perelle, former head of Gar Wood Industries Inc., Detroit, has been elected president of ACF-Brill Motors Co., Philadelphia. He

JOSEPH A. MARLAND

Appointed sales manager, W. A. Jones Foundry & Machine Co., Chicago. Noted in STEEL, Apr. 11 issue, p. 74

WILLIAM F. GODEJOHN

Elected vice president-operations, Harbison-Walker Refractories Co., Pittsburgh. Noted in STEEL, May 9 issue, p. 90

PERRY L. FRANCIS

Elected vice president in charge of sales, Alan Wood Steel Co., Conshohocken, Pa. Noted in STEEL, May 2 issue, p. 169

succeeds **Ronald R. Monroe,** resigned, but who remains with the company as a consultant. **E. J. Parker,** who has also resigned, served as vice president and assistant general manager.

—o—

Robert S. Strawsburg has been appointed field engineer in Europe, with headquarters in Paris, France, for Warner & Swasey Co., Cleveland. He will work with the company's 13 dealers established throughout England and the continent in the application of Warner & Swasey turret lathes, automatics, and tapping machines. He has been with the company's East Orange, N. J., office.

—o—

J. Frederic Land has been appointed manager of sales, **Nelson B. Morrow,** office manager, and **Leslie S. Bishop,** sales metallurgist for Alan Wood Steel Co., Conshohocken, Pa. **W. E. Bossert** has been transferred from Philadelphia district sales to New York district sales, and **John L. Hallman,** from general sales to Philadelphia district sales.

—o—

Harrison Taylor, since 1938 associated with Whiting Corp., Harvey, Ill., both as an engineer and estimator in the railroad products department, has been transferred to the New York district office as a sales engineer.

—o—

Kaiser Co. Inc., Oakland, Calif., announces the removal of its eastern sales office from 30 Church St. to 620 Fifth Ave., New York. **W. F. Pelletier,** eastern sales representative for Kaiser Steel, will be in charge of the Fifth Ave. office.

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A. L. Lippitt has been appointed products manager of Alnesium cases, Reynolds Metals Co., Louisville. He previously was regional manager of the midwest with Mills Industries in Chicago.

—o—

Edward A. Miller, manager, Building Panels Division, Detroit Steel Products Co., Detroit, has been named chairman of the Light Gage Steel Manufacturers & Fabricators Group, American Iron & Steel Institute, New York.

—o—

J. D. Potter has been promoted to assistant treasurer at the Los Angeles office, Columbia Steel Co.

—o—

T. C. Ingersoll has been appointed general manager, Shipbuilding Division, Bethlehem Steel Co., on the Pacific Coast. He succeeds **W. M. Laughton,** retired.

OBITUARIES . . .

William T. Mossman, 76, before his retirement in 1947 director of advertising and publicity for Jones & Laughlin Steel Corp., Pittsburgh, died May 5. He had been in charge of the company's advertising for 40 years.

—o—

Frank B. Bell, 72, founder and chairman of the board, Edgewater Steel Co., Pittsburgh, and chief of the Pittsburgh District Ordnance during most of World War II, died May 6.

—o—

Emil C. Stolberg, 74, chief engineer, American Car & Foundry Co., New York, until his retirement four years ago, died at his home in Glen Ridge, N. J., May 4.

—o—

Mark O. Ward, manager of the Cincinnati district, Replacement Tire Sales Division, B. F. Goodrich Co., Akron, died Apr. 22 after a brief illness.

—o—

Montague Ward, 59, vice president and general manager, Welding Shipyards Inc., Norfolk, Va., died May 4.

—o—

William B. Grischy, 77, president, Moeschl-Edwards Co., Covington, Ky., died Apr. 28.

—o—

Charles S. Sumner, western representative of Riverside Metal Co., Riverside, N. J., died May 6.

—o—

Oswald E. Herde, 50, tool designer with Ben-Hur Co., Milwaukee, died May 2, following a heart attack.

—o—

W. W. French, 57, advertising manager, Dodge Mfg. Corp., Mishawaka, Ind., for the last 27 years, died May 6 in South Bend, Ind.

—o—

Walter A. Bolton, president, R. B. Rock Bit Co. and Syracuse, N. Y., representative of Wyckoff Steel Co., Pittsburgh, died recently.

—o—

Earl O. Aspdin, 63, partner in H. Weiss & Co., New York, manufacturer of machinery, died May 8 at Montclair, N. J.

—o—

John M. McCabe, 71, president, McCabe Boiler Corp., Newark, N. J., died May 8 at his home in South Orange, N. J.

—o—

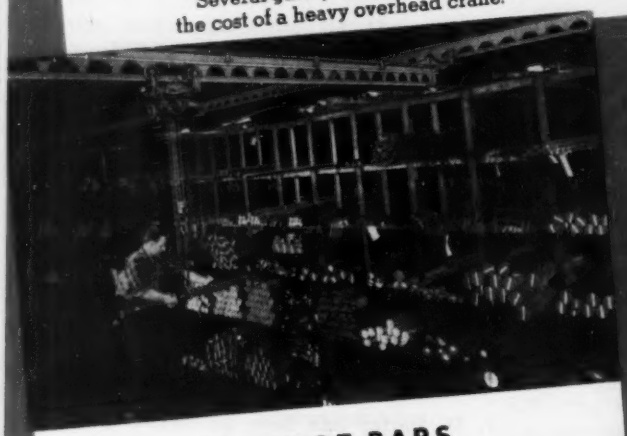
Frank J. Timmens, 54, retired general sales manager, Dodge Motor Co., division of Chrysler Corp., Detroit, died at his home at La Selva Beach, Calif., May 1.

Tramrail HANDLING WHICH WILL HELP *You?*

GANTRY CRANES SOLVE PRODUCTION PROBLEMS

Inexpensive single-leg gantry cranes are solving production problems in many plants. They usually work under heavy overhead cranes and take care of light local handling.

Several gantry cranes often can be obtained for the cost of a heavy overhead crane.



20 FOOT BARS
Stored and Handled Efficiently

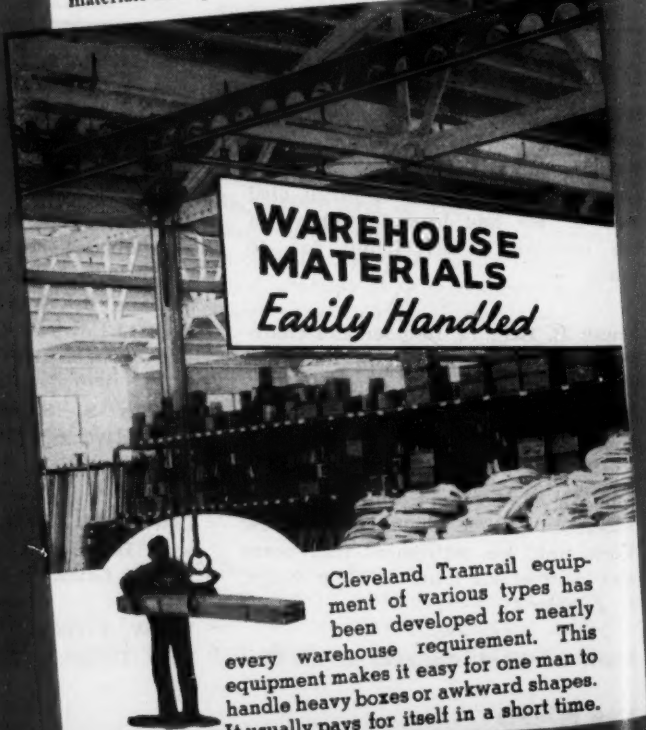
Simple, inexpensive overhead tramrail cranes make it easy to handle long, unwieldy bars and store them in racks where readily found. One man can easily and quickly place a heavy bar into or take out of storage and deliver to any point covered by the crane.

CAB-OPERATED CARRIER HANDLES LONG PIPE AND BEAMS

It is difficult to handle long pipe and beams through narrow shop aisles and around corners on floor conveyances. Cleveland Tramrail equipment makes this work fast and easy because it operates above floor obstacles and traffic. It hoists and delivers materials from point to point without rehandling.

675 MOLDS EVERY HOUR

Every hour 675 molds are carried to the pouring section and then through cooling and shakeout areas on this Cleveland Tramrail continuous foundry mold handling system. Because travel machinery is overhead, away from dirt and hot metal, production interruptions and maintenance are kept at minimum.



WAREHOUSE MATERIALS *Easily Handled*

Cleveland Tramrail equipment of various types has been developed for nearly every warehouse requirement. This equipment makes it easy for one man to handle heavy boxes or awkward shapes. It usually pays for itself in a short time.

Engineering News . . . AT A GLANCE

HELPS CUTTING EFFICIENCY—Bonding resins used on abrasive belts and disks produced by Behr-Manning Division of Norton Co., are employed not only as a tenacious anchoring medium for the abrasive particles, but as a heat-resistant coating that greatly increases cutting life of the abrasive. When used dry, according to the company, these double-bonded abrasives are immune to cutting heats and humidity. When wet, they are impervious to water, cutting oils or coolants. Thus they can be used for faster and longer cuts, the belts lasting about five to six times longer than conventionally bonded units, according to performance records.

TAKES HEAT FROM HEAT— Incoming pieces are gradually heated by outgoing pieces in the two porcelain enameling furnaces, soon to go into operation in Kaiser's Fleetwing plant, Bristol, Pa., for enameling bathtubs and kitchen sinks. An elevated U-shaped oven operating at about 1550° F minimizes convection heat losses from each of the units, and design of an inclined heating chamber is instrumental for the interchange of heat between the incoming and outgoing pieces. The setup, it is said, not only provides heat economy but reduces warpage by preheating the work slowly.

FRICTION, YET NO FRICTION—Friction of ball or roller bearings normally makes up such a small part of the total in a study of rolling resistance that serious errors will not result even if they are neglected, according to The Texas Co., New York. Typical cord auto tires, it is pointed out, have a rolling resistance which increases slowly from about 1 per cent of the load carried at zero speed to about 1.6 per cent at 60 mph. The wheel bearings, however, have a traction resistance of hardly 0.1 per cent.

EASTERN VS WESTERN BRICK—Effect of impurities on the refractoriness of silica brick is much more pronounced in brick of Eastern than of Western origin, L. L. Wells Jr., ceramic laboratory, South Works, Carnegie-Illinois Steel Corp., revealed before the National Open Hearth Committee at a meeting sponsored by the American Institute of Mining and Metallurgical Engineers in Chicago recently. This wide difference in behavior, he said, is believed to be directly related to the effect of alkalis since the Eastern product inherently contains from three to four times more alkalis than the Western—even though total of detrimental oxides may be essentially the same.

LOW-COST OXYGEN— New process developed by Hydrocarbon Research Inc., New York, for producing low-cost oxygen from air is reported to be commercially successful. First plant to use the method—Glen McCarthy's Chemical Co., Winnie, Tex,—according to the New York company is producing in excess of 200 gross tons per day of 90 per cent oxygen for the synthesis of methanol, formaldehyde and other petrochemicals. In large quantities, the process can make oxygen available for steelmaking at a cost as low as $3 per ton. However, costs at the McCarthy operation many run somewhat higher than this figure. Second plant using the process is expected to be in operation later this year with a capacity of 2000 tons per day of oxygen. It is being built for Carthage Hydrocol Corp., Brownsville, Tex.

REFINED ACCURACY—Accurately reproducible results in spectrochemical analysis are obtained from the use of a new electrical power source designed from the ground up in the research department of American Steel & Wire Co. The power unit, which provides energy for either the spark or arc method of quantitatively analyzing specimens, meets requirements of reproducibility, stability, sturdiness, constancy of behavior, and ease of operation. (p. 80)

"PRODUCTION TOOL" — Peculiar characteristics of rubber are making it an important production aid capable of performing many jobs especially when combined with metals. Its reputation for isolating vibration and increasing efficiency of flexible couplings is already well established in the metalworking industry. Now machine tool, accessory and equipment builders are beginning to recognize and investigate possibilities of the material. (p. 82)

NO MISTAKE ALLOWANCE — A bad move in selecting an overhead crane could easily throw handling costs out of line and at the same time interfere seriously with plant operations, it is pointed out. Since so many types of cranes are made offering numerous optional features, mistakes are surprisingly easy to make. One of the major factors to consider in selecting such a crane is the class of service. (p. 86).

STILLS OF STEEL—Coke oven designers have gone to the petroleum industry for their still designs. Modern stills, it is pointed out, are made entirely of steel plate instead of cast iron. Gradually increased vapor space above the trays now allow high boil-up rates and heavy backflows, which in turn make larger forward flow and closer cutting possible. Pumped backflows with head boxes that accurately control backflow replace the old dephlegmator. Also efficiency of condensers is greatly increased by use of high velocity tubes, and automatic control boards eliminate much guessing formerly necessary. (p. 102)

IMPROVED Spectrographic Power Source

Now Practical for Standard Metallurgical Laboratories

Under test for the last 2 years, new electrical power equipment provides energy for either spark or arc method of quantitative analysis, meeting requirements of reproducibility, stability and ease of operation

By W. O. EVERLING
Director of Research
American Steel & Wire Co.
Cleveland

ACCURATELY reproducible results in spectrochemical analysis are obtained from the use of a new electrical power source that provides energy for either the spark or arc method of quantitatively analyzing specimens in the research department of American Steel and Wire Co. Installed in June, 1947, the new electrical power source was designed from the ground up to meet the requirements of reproducibility, stability, sturdiness, constancy of behavior, simplicity of maintenance, and ease of operation.

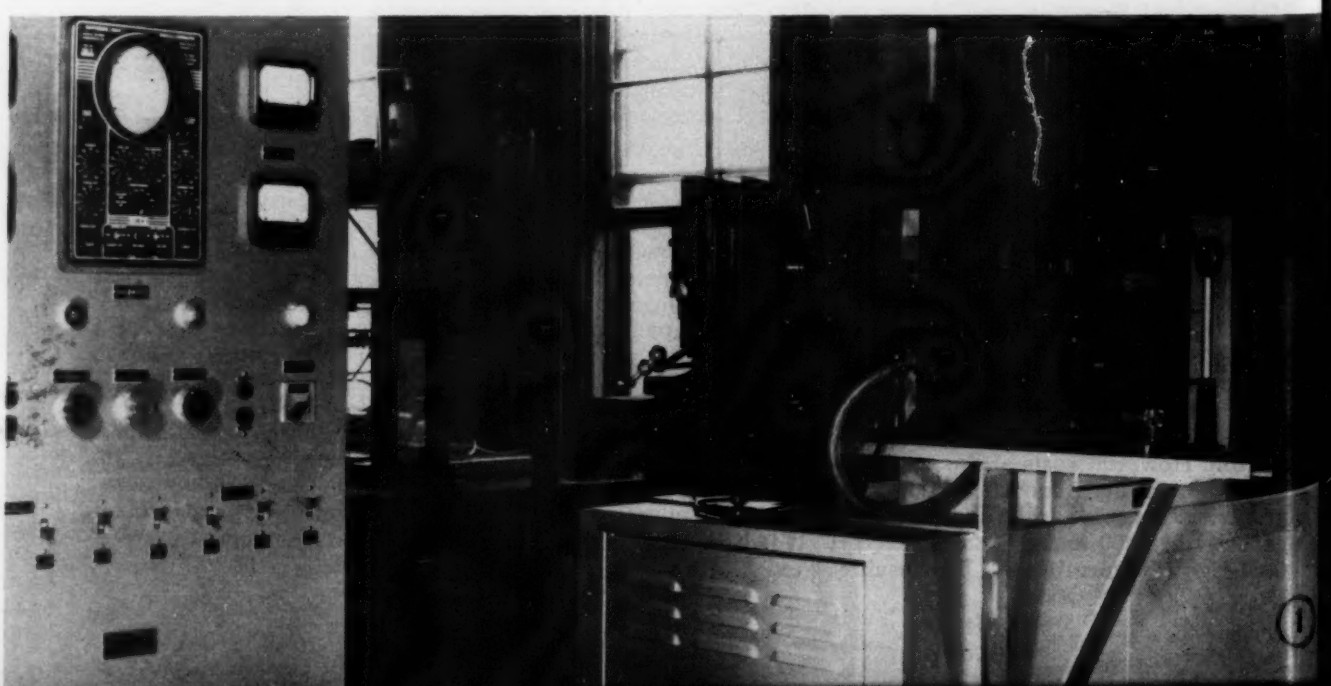
Unless the power source used with spectrographic equipment for quantitative analysis has an invariable energy output for a given set of control settings, it is extremely difficult to correlate the results from successive tests. The failure of earlier types of equipment to solve satisfactorily this problem received considerable study in the research laboratory of this United States Steel Corp. subsidiary in the past. Difficulties traced to the inadequacies of equipment then available demonstrated that an electrical power source would have to be designed to meet the needs.

For some time research engineers of the company had been following the fundamental studies on control of excitation currents for spectrographic analysis performed by Professor R. A. Wolfe and his associate, Dr. John Enns, at the University of Michigan. The research department of the American Steel and Wire Co. approached Leeds and Northrup Co. to obtain a commercially practical new power source which would include the findings of Prof. Wolfe and Dr. Enns but which should also incorporate a number of new features to make it thoroughly practical for use in standard metallurgical laboratories.

In a conference between representatives of both companies, it was decided that the new source should include the following principles:

1. A small, packaged unit which could serve as a base for the spectrograph, thus eliminating a separate source room;
2. An air interrupter that would eliminate line-

Fig. 1—View of American Steel & Wire Co. research department spectrochemical analytical laboratory, showing the spectrograph mounted on top of control cabinet for new power source. Panel board, with controls for the new equipment is at left



voltage control and high maintenance costs that are experienced with a mechanical interrupter;

3. An oscillograph mounted in view of the operator so that it is possible to observe excitation conditions at all times—this being of utmost importance for establishing reproducibility of power output;
4. A source for universal application in emission spectrochemical quantitative analysis.

The experimental power source consists of the electrical equipment necessary to produce either a high-voltage, alternating current spark, or a low-voltage, spark-ignited, alternating current arc. As set up in this laboratory, the source installation consists of a steel cabinet which serves as a base for the spectrograph and in which are installed the capacitors, inductance coils, safety gap, transformer, timers, air filter and controls, secondary resistance and relays. Mounted on the steel cabinet, adjacent to the analytical stand, is a small steel box, lined with acoustical material to decrease noise, which contains the air interrupter assembly. The air interrupter is constructed with magnesium pins that can be adjusted to control peak voltage and breaks per half cycle.

Control of the electrical elements of the power source is effected by instruments and controls on the panel board which consists of the voltmeter, ammeter and primary resistance controls for both arc and spark circuits; start and stop buttons, shutter and air controls, either operated automatically or manually; lights to aid the operator in checking operating conditions; and an oscillograph. Both the primary resistance and the oscillograph are mounted behind the panel board.

Electrical equipment and control elements incorporated in the electrical power source include a 3-kv transformer with a 33,000 v peak voltage. Capacitors provide a capacity range of 0.002 to 0.016 microfarads. Variable inductance in the spark circuit ranges from 10 to 40 microhenries. Approximately 300 microhenries inductance is permanently mounted in the arc circuit. A primary resistance of 11½ ohms permanently mounted, and a variable resistance of 0 to 15 ohms, are included in the spark circuit. In the arc circuit, 5 ohms primary resistance is permanently mounted, and a variable resistance of 0 to 37 ohms is provided. A secondary resistance of ½ to 9½ ohms is also provided. Current in the spark circuit can be varied from 5 to 25 amperes, while the current in the arc circuit is variable between 0 and 5 amperes. The safety gap has been provided with a graduated scale to simplify adjustment. Timers provide for presparking, sparking and arcing intervals from 0 to 120 seconds.

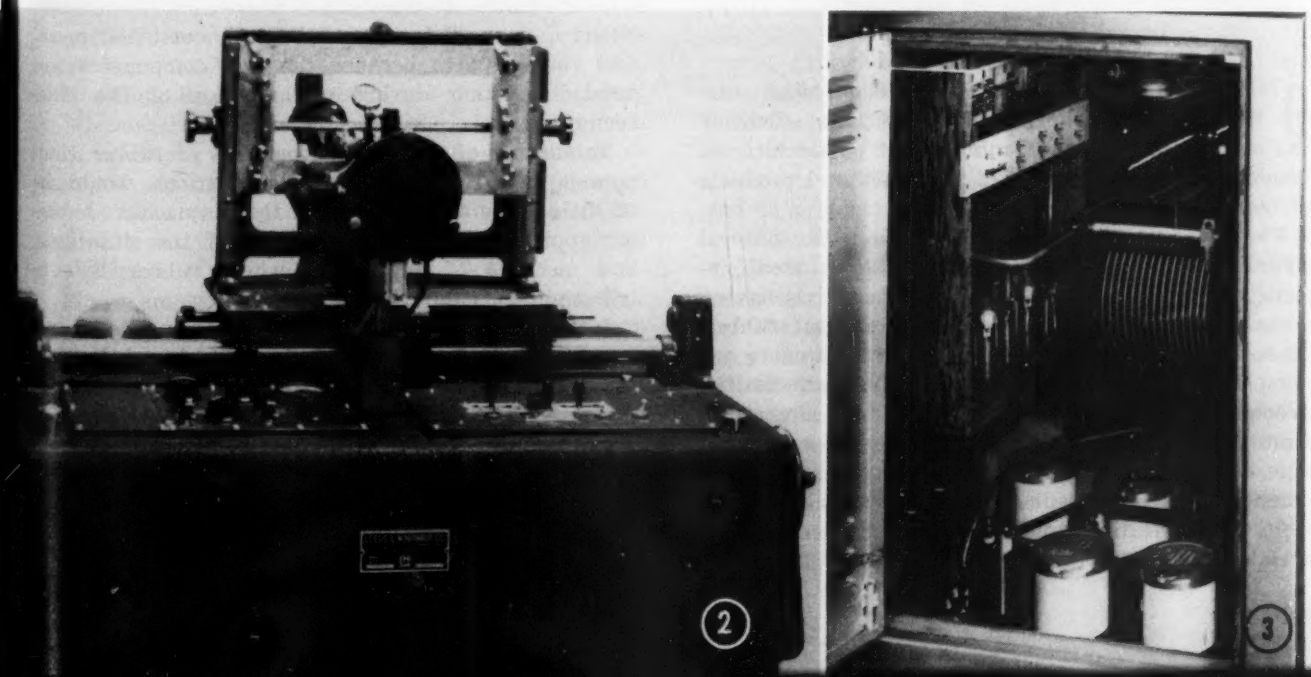
The electrical power source was so designed that all electrical variables can be adjusted easily and safely with a minimum of time consumed. Safety switches on all doors and in other locations guarantee safety to operating personnel. By adjusting the different variables in the circuit by means of control units on the panel board it is possible to set up various source parameters that result in specific energy inputs to the analytical gap.

Spectrometry—As in all power sources, certain factors increase or decrease the energy output and these characteristic features must be taken into consideration when adjusting the variables on the new power source in this laboratory. When making adjustments to obtain the desired energy output, it is desirable to change one variable at a time in order to obtain the characteristics that best meet the needs of the samples being analyzed.

After primary resistance is established, distance of the air gap (auxiliary gap) is adjusted so that the proper current (amperage) and number of breaks per half cycle are discharged in the analytical gap to provide the proper burn (avoiding deep craters in the specimens) that will give uniform analytical results from sample to sample. (*Please turn to Page* 116)

Fig. 2—Recording microphotometer employed in conjunction with spectrochemical analytical procedures. This is said to be the first installation of the commercial form of this unit

Fig. 3—Partial view of some of the electrical equipment forming the new power source for the spectrochemical unit



Rubber Bonded to Metal

Rapidly Becoming a "Production Tool"

By WILLIAM A. KEETCH
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Peculiar characteristics of rubber are making it an important production aid capable of performing many jobs especially when combined with metals. Machine tool, accessory and equipment makers are just beginning to recognize and investigate possibilities of the material

ONE field of invectigation which is yielding startling advances in overall production efficiency is the application of rubber, and particularly of bonded rubber, to the varied machines and products of industry.

The term "rubber" includes not only the natural hydrocarbon of vegetable origin and its modifications, but also all those synthesized materials having some or most of the properties of natural rubber. Since both the natural and synthetic elastomers are compounds, each ingredient of which affects the properties of the resulting material, an almost infinite variety of combinations of properties is available. One of the most useful characteristics of rubber compounds is their adhesion, under suitable conditions at fabrication, to many other engineering materials—for example, to most metals. The term "bonded rubber" is applied to such combined metal and rubber parts because the two components are bonded together during vulcanization of the elastomer.

Tabulation of the many properties of rubber compounds and their limitless combinations would be of little value at this point in the discussion. A better approach is to examine some of the situations and methods of application where rubber is contributing to manufacturing efficiency.

Isolates Vibration—Vibration is one the worst saboteurs of efficient production. Machined finishes are spoiled, accuracy is impaired, worker fatigue is increased, and equipment is frequently shut down for repairs or rapidly worn out when vibration is present. While great strides have been made in recent years to reduce vibration at its source, there is a practical and economical limit to this reduction. The obvious answer is to confine remaining vibration as much as

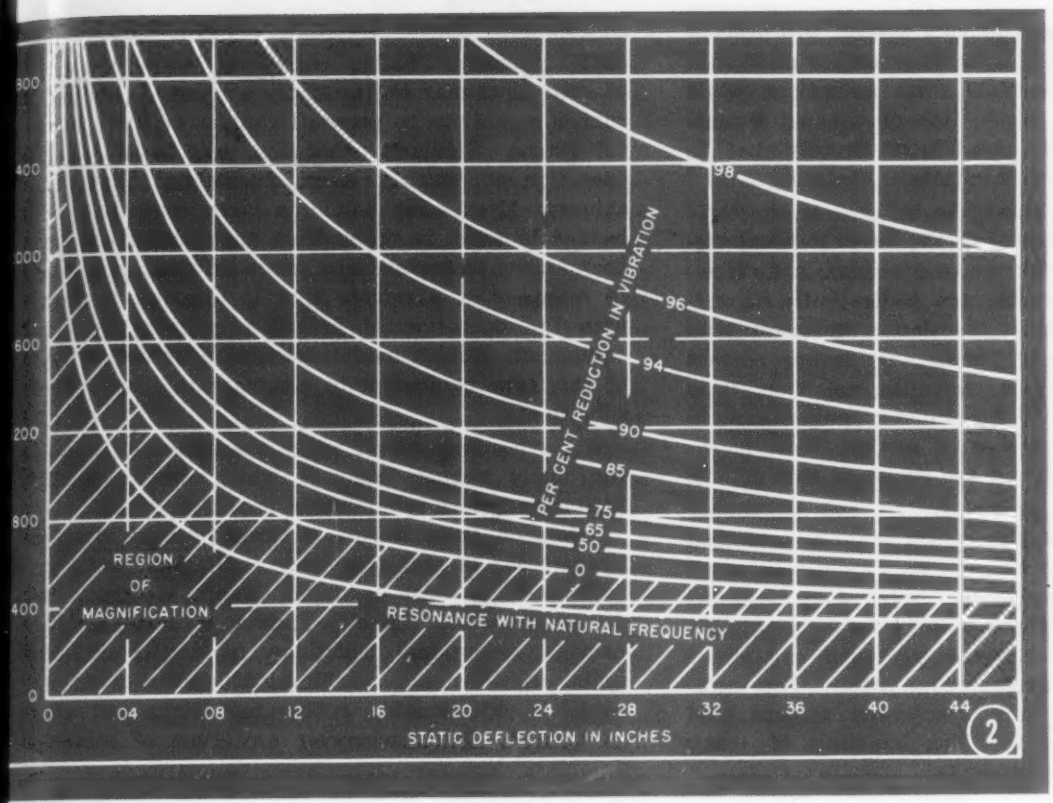


Fig. 1—Surface plate mounted on plate form holder-type mountings

Fig. 2—A family of curves showing per cent isolation versus static deflection versus disturbing frequency

possible. Rubber offers characteristics admirably suited to reduce transmission of both noise and vibration. Mountings, joints, and couplings of rubber-bonded-to-metal construction form flexible connections which can, by proper design, isolate practically all vibratory disturbance. In instances where it is not practical to isolate the vibration source closely, it is often possible to effectively protect delicate instruments or workers by mounting the instrument itself on the worker's platform.

In a particular textile mill, for example, it was not feasible to mount each of the heavy looms which were shaking the entire building. Worker fatigue and lost time from foot troubles was excessively high. By the simple expedient of supplying their people with properly designed rubber-soled shoes, production was measurably increased. In effect, the workers were "mounted" on rubber and isolated from much of the vibration.

Mounting Selection—Three types of vibration may be encountered. Most common is a steady vibration with usually a single basic-frequency. An engine or motor would typify such a source. Proper selection of scientifically designed mountings and couplings can reduce transmission of this type of disturbance to a negligible value.

For example, we might assume a motor-generator set having a horizontal shaft operating at 1750 rpm. Rotor unbalance will produce a vibratory force rotating in a vertical plane. If we imagine the set operating in space, it is apparent that no vibration would be transferred to the building structure. It is equally obvious that if the unit is bolted solidly to the floor, all vibratory energy must pass into the structure. By employing resilient mountings of proper design, we can very nearly approach the former condition.

Fig. 2 shows a family of curves which graphically illustrate the degree of isolation obtained with any combination of disturbing frequency and mounting stiffness. This latter term is expressed as static deflection, which is the steady deformation of the mountings under weight of the supported unit. Going back to our 1750 rpm motor-generator set, we see that if mountings having a static deflection of 0.12-inch are chosen, over 90 per cent attenuation of the vertical disturbance will result. In other words, less than 10 per cent of the vibratory energy will reach the supporting structure. In addition to the 1750 rpm basic disturbance emanating from such a unit, higher harmonics of this vibration and even noise, which is simply a high-frequency vibration, will result. A glance at Fig. 2 makes it apparent that even better isolation exists for these higher disturbing frequencies. Thus, it is only necessary to consider the lowest disturbing frequency to be encountered and all others will be adequately provided.

Instrument Mounting—If, as is sometimes the case, it is not feasible to resiliently-mount the motor-generator set on the structure, then consideration should be given to mounting any instruments flexibly, such as voltmeters and ammeters, which have to be supported on the same structure. Exactly the same procedure is followed in selecting resilient mountings for the instrument; that is, the static deflection is selected from Fig. 2 to give degree of isolation required. Let us assume that a recording meter is required on the above motor-generator set to provide a continuous record of performance. If bolted solidly to the set's frame, such an instrument could soon be rendered useless as a result of pivots and bearings being hammered out. Attachment through suitable bonded-rubber mountings, selected to deflect ⅛ to

3/16-inch under the instrument's weight, will prolong its life indefinitely. Fig. 1 shows a surface plate supported on holder type plate form mountings while Fig. 3 illustrates the application of channel mountings to a scale. Both installations protect the life and accuracy of the instruments.

A word of caution should be injected here. Foregoing examples consider only the vertical lineal disturbance created by the motor-generator set. However, most spring systems are bodies with six different degrees of freedom, translation and rotation in each of three different planes. To insure correct and perfectly satisfactory mounting selection, it is frequently necessary to investigate performance in most or all of these modes of motion. This is entirely possible, but beyond the scope of this article.

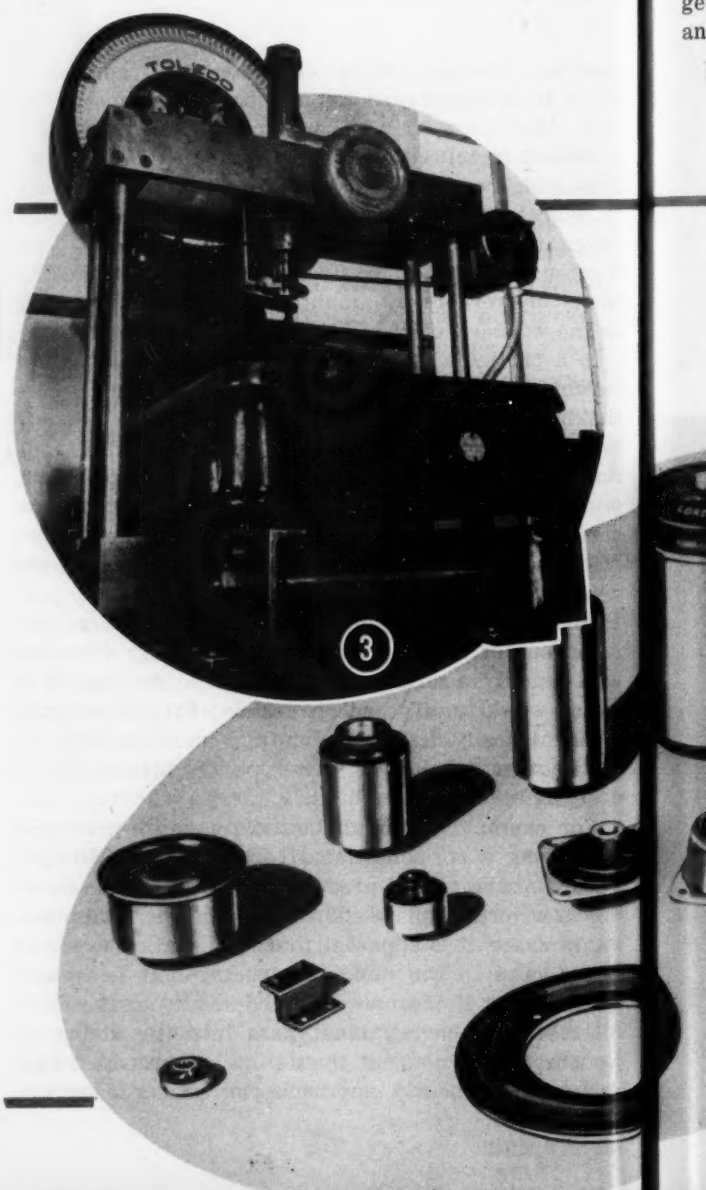
An interesting corollary to the use of rubber springs for vibration absorption may be obtained by again referring to Fig. 2. If a relatively small static deflection is chosen, the system may be tuned into the area where the vibratory force is actually magnified. Thus, a vibrator so tuned can shake a mass many times greater than itself. This principle is employed in bins, conveyors, screens, and packaging machinery for the handling of many powdered or granular products.

Cushioning Impacts—Second classification of vibratory disturbance occurs as a single or transient impulse and is generally thought of as shock or impact. Such a disturbance usually results in very high accelerations accompanied by violent high frequency oscillations. Here, bonded-rubber elements provide cushioning and marked lowering of the acceleration rate as well as almost total isolation of the fatigue causing high-frequency components. Shock absorption of this nature is of primary concern during shipment of even comparatively rugged equipment. Extra violent "humping" in the freightyard, or a dropped crate have ruined many an improperly protected shipment. Even when no structural damage occurs, such handling may disturb factory set adjustments and necessitate expensive servicing at the time of equipment's installation. Accordingly, suitable rubber mountings are being incorporated in shipping containers for everything from refrigeration units to oscilloscopes. For example, the military services are specifying that jet and rocket engines be so packaged. The strength of these units is limited by the desire for minimum weight and, as a result, dropping such an engine even 1 foot without shock protection results in irreparable damage. Rubber fittings incorporated in the containers protect the equipment from all handling shocks during storage and transportation. Dropping the mounted unit as much as 36 inches, railroad humping shocks of 10 to 20 "G", and so forth, are all adequately cushioned.

Mobile installations of sensitive devices require similar treatment. Proper mountings protect x-ray equipment in a mobile laboratory, and electronic equipment in military ground or air vehicles. The several television systems make extensive use of mountings in their mobile stations. Likewise, shock is frequently experienced in the operation of large relays and circuit breakers. These open or close with considerable impact which is detrimental to adjacent equipment. Either individual relays or panels of such units may be resiliently supported on bonded rubber mountings to prevent transfer of these harmful forces. Similarly, shock is experienced in the operation of punch presses, shears and heavy machinery. Even when bolted to large concrete blocks bedded in sand, impulses from such equipment have been known to travel many yards through the ground to reappear at a remote spot to interfere seriously with the operation of precision grinders or other equipment. Rubber mountings can be applied to much of this type equipment to eliminate this undesirable condition.

A further example of shock absorption is found in the many rubber bumpers which provide motion limitation with a minimum of impact and noise.

Vibration from Noise—A third type of vibration is composed of high-frequency oscillations and manifests itself as noise or sound. Again, elasticity and, particularly, the reflective power of bonded-rubber provide exceptional isolation. In air conditioning units and business machines, wherever translated sound is objectionable, rubber mountings and joints serve well. Thus, wherever any type of vibration



is encountered, the adjacent production equipment—whether it be human, or a grinder, a lighting fixture, or a sensitive scale—will function better and more efficiently in protected by rubber. A group of typical bonded rubber mountings is shown in Fig. 4.

Bonded-rubber parts incorporated into machinery offer further advantages in that they will provide a ball-joint or a sliding and pivoting action for ocillatory motion, with various stiffnesses in various planes, without wearing surfaces, lubrication, or maintenance, and with minimum force or friction loss.

In rubber flexible couplings, fullest advantage is taken of many of the characteristics of this material. Relatively large torsional-resiliency introduces considerable flywheel effect which enables them to deliver smooth, impulse free power, isolating destructive torsional vibration and shock. Because the flexing takes place within the elastomer, there are no surfaces to rub or wear or require lubrication. They are quiet in operation and remain quiet, as well as completely stopping noise transmittance through the shafts. They are unaffected by operation in the presence of abrasive dust, chips, or similar contamination and are generally of smooth external contour. All these advantages are inherent in such a part together with exceptional ability to accommodate both angular and parallel misalignment.

Floating Holder—Use of bonded rubber in conjunction with cutting tools has made great strides. A floating holder for accurate drilling and reaming has been developed recently. Its rubber-bonded-to-metal construction combines a positive drive and large floating-capacity, both angular and parallel, with small size, simplicity, almost frictionless action, and no maintenance. driving torque, in either direction, is accomplished through steel pins with no relative torsional motion. Yet the rubber permits adequate angular and parallel motion to accomplish the floating requirements.

In lathe work, tool chatter has long been a detriment, ruining finish, reducing cutting speeds and shortening tool life. For use with the dog in "on-center" turning, a driver is available which incorporates a bonded-rubber sandwich. Inserted between the dog and driver on the face plate, this rubber element permits the work to slow down slightly for an instant whenever the tool load increases. This action relieves the shock loads on both tool bit and machine gearing, as well as breaking up the chatter frequency. Tested on an intermittent roughing cut on the throws of a large crankshaft, tool chatter was completely eliminated even at considerably increased cutting speeds, while tool life was several times increased. Similar results are obtained by clamping tool holders in the tool post between these thin bonded-rubber sandwiches. This same principle is being investigated for holding bits in milling machine cutters. Preliminary tests indicate that a very considerable improvement in speed, life and finish is obtained.

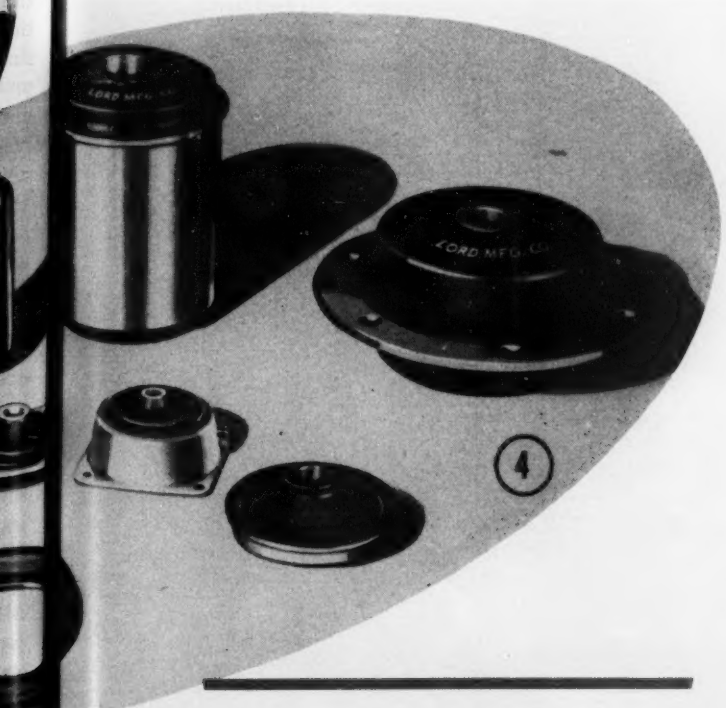
Aids Grinding Operations—In the abrasive field, hard-rubber compounds are frequently employed as the binder in cutting and polishing wheels. Use of relatively soft rubber as a backing means for sanding and polishing operations enables the abrasive to contact uneven or curved surfaces.

The friction and abrasive resistance qualities of rubber are responsible for increased use of rubber grips and friction devices. Jaws, handles, and feet of tools of all kinds have been rubber covered, thus providing a sure long wearing grip having elasticity to accommodate dimensional variations and to prevent surfaces marring. Rubber surfaced friction wheels provide good torque capacity with quiet, almost wearless operation. One such friction drive uses a roller running on the rubber coated face of a steel disk and combines excellent clutch action, variable speed and reverse action in one simple long-lasting unit. Flat, round and V-belting for power transmission and belts for conveyor systems also make use of the same rubber characteristics.

Sleeve Bearings—When lubricated with water, rubber has a very low coefficient of friction on many materials. This fact, coupled with its high abrasion resistance, has led to the use of rubber sleeve-bearings for applications where loads are not too high and where the bearing can be flooded with water. Mine conveyor bearings, water pump bearings, and marine shaft bearings are excellent examples. Carrying this thought further, a worm-type pump is available where stator is made of rubber. (*Please turn to Page* 116)

Fig. 3—Scale mounted on channel-type mountings

Fig. 4—Group of typical bonded-rubber mountings



EFFICIENT HANDLING

CAN CUT PRODUCTION CO

17

Cranes, hoists, monorail systems and elevators transport enormous quantities of materials, facilitating production in steel mills, foundries, machine shops, automobile plants and in other metalworking factories. Integration of hoist and monorail systems with overhead cranes is receiving considerable attention as a means of bringing all areas of a given plant under a centralized handling plan

Fig. 17 — Some of the handling devices used with various types of cranes and hoists

Fig. 18—Thirty-ton, 3-motor, 90-foot span electric traveling crane in a steel mill. Courtesy Whiting Corp.

Fig. 19—Light-duty hoist and tramrail system serving a machine shop area. Courtesy American Mono-Rail Co.

Part III of the current series

ROLE of various types of cranes, hoists and monorail systems and elevators can hardly be overemphasized in any discussion of materials handling in metalworking plants. It should be similarly obvious that only through the proper application of all this equipment, can maximum savings in time and labor be realized.

Purchase of an overhead crane is a major expenditure. A mistake in selecting one of these units could increase handling costs and at the same time seriously interfere with plant operations. And mistakes are surprisingly easy to make, since so many types of

18

By WALTER F. TOERGE
Associate Editor, STEEL

...METHODS ...COSTS

cranes and so many optional features are available.

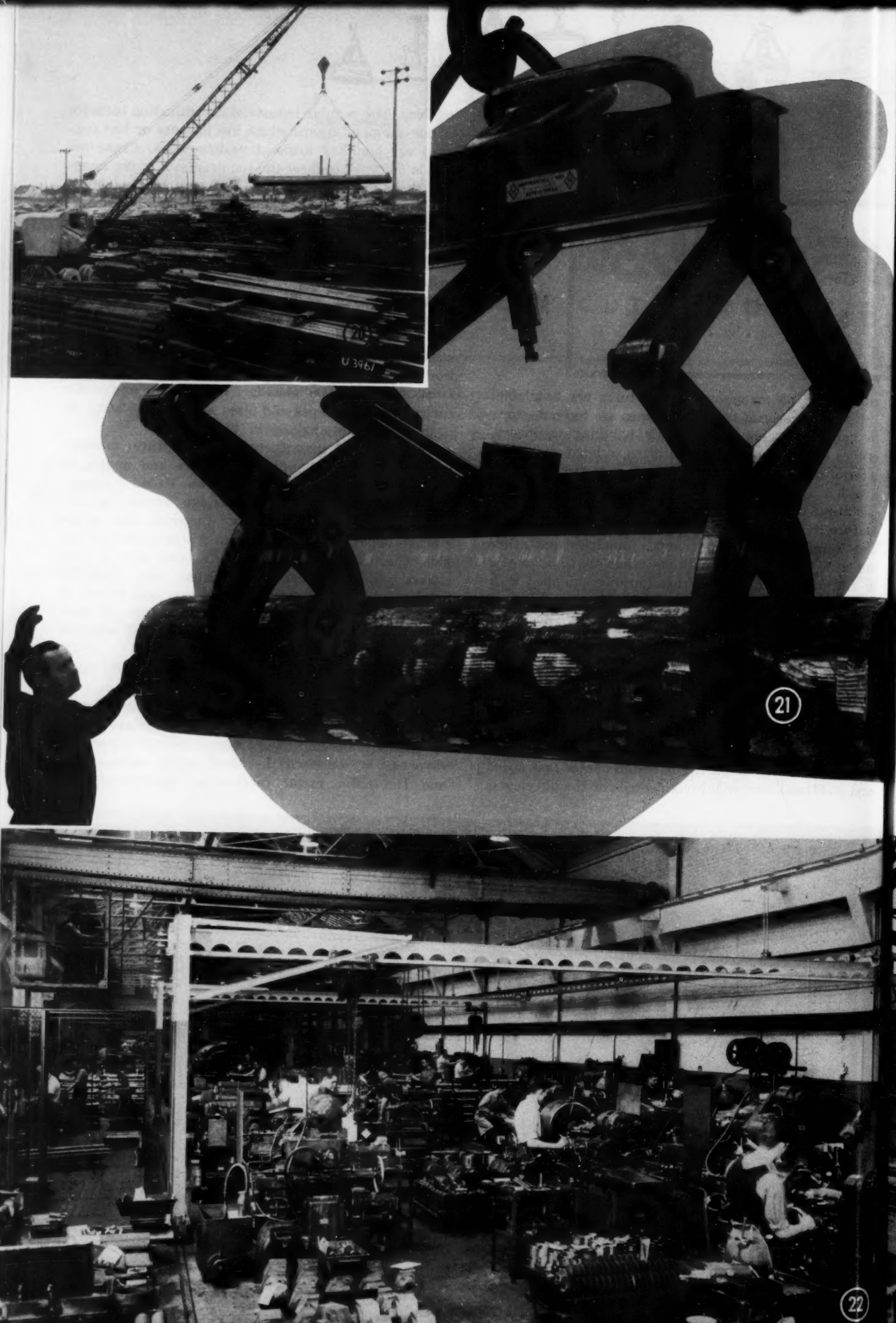
Uses of overhead traveling cranes are too numerous to list. According to materials handling engineers, cranes of this type are best utilized to move materials intermittently over any desired lines of travel within a given area. Areas served usually require transportation of materials regardless of cross traffic or uniformity of load. Loads themselves vary in size and weight. In machine shops, foundries and other industrial plants where bulk materials are to be moved in and out of storage, overhead cranes equipped with magnets and grab buckets are in service. Some of the products and materials carried by overhead cranes are: Car bodies, locomotives, limestone, coal, sand, slag. Steel companies would be helpless without overhead cranes.

Class Service—Class of service is the major factor dictating the kind of crane to be selected. Cranes for continuous service such as steel mill application are built with emphasis on safety, ruggedness, long life, accessibility of parts for maintenance, fast speed and electrical equipment engineered for the duty cycle involved. The regular industrial classification includes a wide range of cranes which are in more or less constant use handling loads of various sizes. Crane design is modified to meet the requirements of the handling tasks to be performed. Intermittent industrial service covers cage or floor-controlled cranes not in constant use. Standby service makes only limited demands on cranes thereby making possible a further modification of engineering features and changing costs, too.

One high alloy jobbing foundry employs four overhead cranes with capacities for carrying 8 and 15-ton loads handling flasks, cores, molds, hot metal, castings and in charging the electric arc and induction furnaces. Heats produced in the furnaces weigh from 200 to 10,000 pounds. Centrifugal and static castings of all shapes and sizes are made in some 40 or more different analyses in this shop.[14]

Another plant manufacturing agricultural machinery, receives and handles steel bars and angles in storage and production, using two 10-ton cab-controlled, electrically-operated bridge cranes in cooperation with power trucks. Covering the entire storage department and railroad tracks which are inside the building, these cranes also service the shears and load scrap into railroad cars. Steel in bundles is unloaded from gondola cars and placed in storage. Overhead cranes carry the bundles of steel to the shears, placing them on cradle-topped castered dollies, ready for shearing.

Sheet steel is handled in the same plant by overhead cranes. Bands are cut, wrapping removed and the sheets stored in piles, segregated according to gage and sheet size. Sheets ready for production are picked up by the crane and placed on an inclined roller conveyor set up between the sheet metal storage area and the sheet metal fabricating department. A



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floor-controlled bridge crane running behind the shear line picks the bundle from the conveyor and delivers it to a castered table at the shear. Cranes are equipped with electrically-operated sheet metal grabs.[5]

Crane Standardization — Current trend toward greater standardization of crane controls and motors is expected to bring with it benefits in the form of fewer replacement problems for users. In a typical shop, a crane motor developed trouble and was taken out of service. The maintenance crew installed a spare motor. It just so happened that the resistor on this particular job had a very low value while the replacement motor needed a high value. Within a matter of hours the motor was burned out because the resistor was wrong and did not give the slipring motor enough starting torque. Time out for breakdowns of this type could be greatly reduced if motor replacements did not require substitution also of resistors, pinions, brake wheels, redrilling of brake mounting holes and other changes.[15]

Purchasers of cranes are advised by manufacturers to give careful thought to their motor specifications before ordering equipment, and to stock the correct spare parts.

Standardization for the sake of safety is another subject presently under surveillance. Desirability of preparing and establishing standard recommended practices for electrical installation on cranes, hoists, bridges, etc. has been widely discussed during the past few years. The American Standards Association safety code B-30.2 for cranes, derricks and hoists, adopted and published in 1943, laid the groundwork for continuing efforts in improving quality and safety features of the apparatus. Safety features in overhead handling equipment and the importance of preventing accidents resulting from failure of mechanical safety devices receive a great deal of attention from both designers and users of cranes and hoists.

The following suggestions were made by one steel plant electrical engineer[16] to stop falling hook blocks: Pay careful attention to crane design and to mechanical details of the limit switch installation. Provide for enough travel for the weight to allow the switch to operate. Good maintenance with frequent inspection should include a tripping test. Crane operators must be closely supervised to be sure they do not use the limit switch as a service stop, when it is intended to be an emergency safety device.

Integration of Systems—Hoists are sometimes integrated with overhead crane equipment for the purpose of breaking down the manufacturing areas into functionalized operations. As a matter of fact, large overhead cranes are now increasingly tied in with smaller floor cranes and light overhead units equipped with hoists to take care of the requirements of machine tools or given areas. By utilizing this arrangement sizable economies can be effected. The large overhead cranes do not disrupt production while they handle the small loads.

Advantages of an overhead crane are offered on a smaller scale by hoists, basic types of which are hand chain, electric and air-operated. They are generally used to service machines, to handle materials on loading platforms, to move bulky parts in restricted areas, to lift and carry parts from stores to processing and between processes, to feed assembly lines, and in

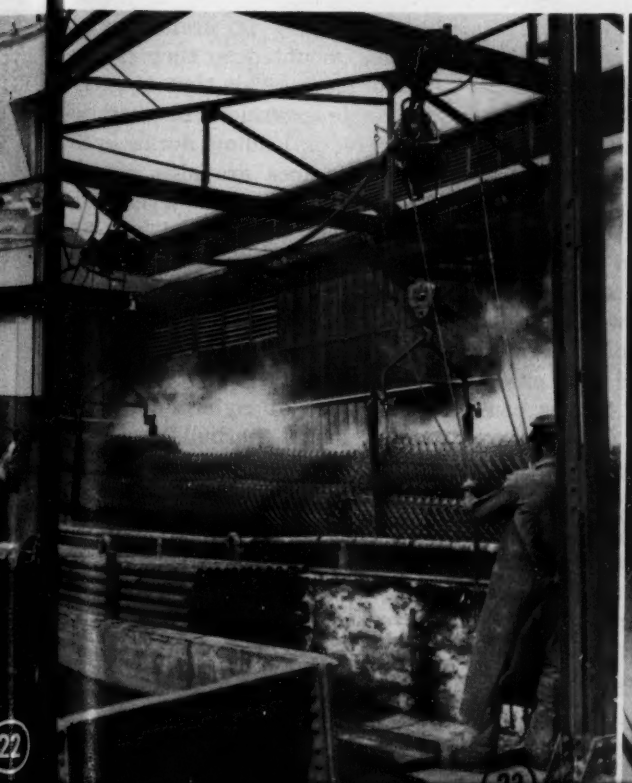
Fig. 20—Self-propelled crane handling billets, bar stock and pipe in an outside storage area. Courtesy Thew Shovel Co.

Fig. 21—Tongs for large round shapes. Courtesy Heppenstall Co.

Fig. 22—Gantry cranes and chain hoists relieve overhead cranes of light work. Courtesy Cleveland Crane & Engineering Co.

Fig. 23—Three-ton air hoists handle material at pickling vats in a galvanizing department. Courtesy Compressed Air & Gas Institute

Fig. 24—Three electromagnets lifting coils of strip steel. Courtesy Ohio Electric Mfg. Co.



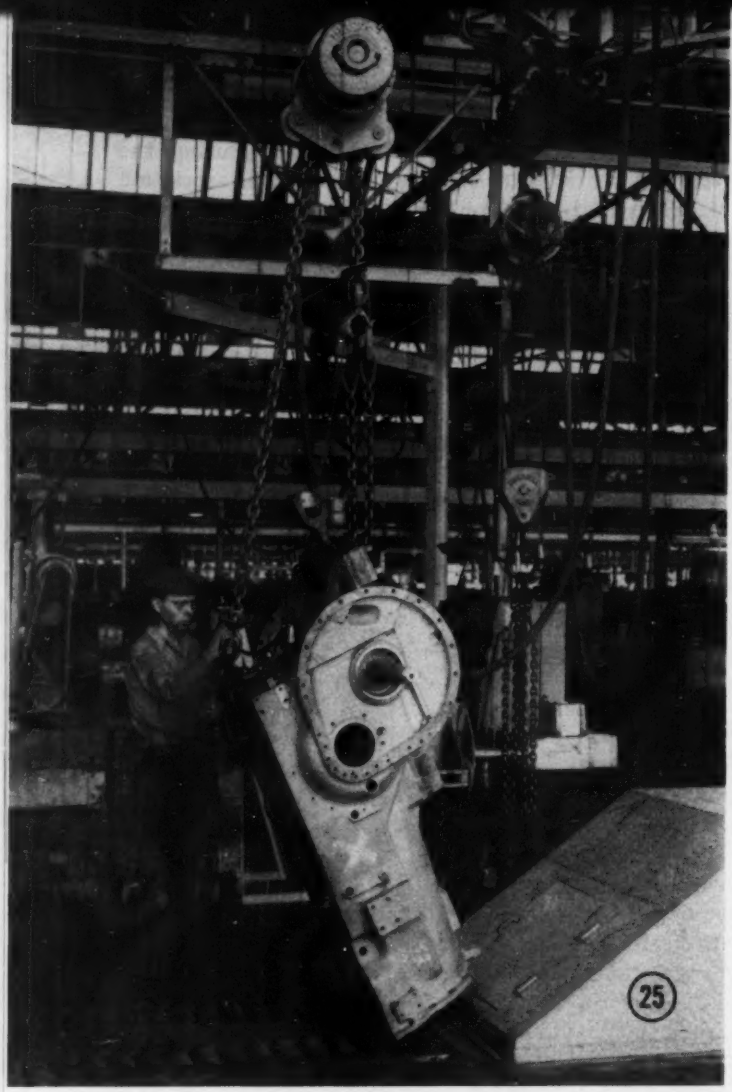


Fig. 25—Special air motor hoist used for rolling over a tractor rear end axle and gear housing which is received at this point upside down on the roller conveyor. Courtesy Ingersoll-Rand Co.

many other applications. Whereas the original purpose of hoists was to move things vertically, they are now employed in horizontal materials handling by running on monorail systems, or suspending from a jib or travelling crane.

As used in the metalworking industry, hand chain hoists with capacities up to about 45 tons aid the assembly of heavy units such as motors and engines, load trucks and railroad cars, facilitate maintenance work on machines with heavy components and lift and hold parts during production operations. They can be suspended in permanent locations or hung on overhead tracks for additional flexibility, as stated previously.

Electric hoists, usually pushbutton controlled, are made in a wide variety of sizes and types with different lifting heights, operating speeds, mountings for stationary use or trolley travel, as well as for monorail systems. Hoists are used in handling bulky parts in restricted areas, placing loads in machine shops, feeding assembly lines.

Weight and cost of this equipment has been greatly reduced. For instance, in one plant not long ago, an electric hoist with 1-ton capacity, designed and built in 1895 was removed from service. This hoist and trolley weighed 1460 pounds. A modern 1-ton capacity hoist with motor-driven trolley weighs a total of 165 pounds and has greater speed and other new features.[17]

In one machine shop hoists were installed on overhead tracks to hasten machine operations. Operators are now saved the job of lifting heavy pieces in and out of their machines. A fabricating shop handles long heavy structural channels using a battery of electric hoists. Steel plate is positioned for cutting, forming or welding by a hoist used with a positive-holding grab.

Air Hoists — Sensitive control possible with air hoists makes this type of overhead handling equipment particularly well adapted for delicate work such as drawing patterns and lowering copes in foundries. Paint rooms, galvanizing shops and other places where spark-free operation is necessary or the presence of acid fumes would damage other types of equipment, are typical installations for air-operated hoists. Air pressure inside the hoist excludes the corrosive atmosphere.

Production in a machine shop processing six castings per day was increased to eight units by adding a 10,000-pound hoist mounted on a jib crane. At a malleable iron foundry, three air motor-driven hoists handling furnace charging paid for themselves in 3 months. In the galvanizing shop of an oil well equipment manufacturer, 3-ton air hoists raise and lower metal parts at the pickling vats; an air-driven trolley overhead moves the load to and from the vats.

Pneumatic roll-over hoists furnish an interesting means of turning over castings, assemblies and other loads. Essentially, roll-over hoists are the same as standard hoists except that a chain and wheel take the place of cable and rope drum, with a hook attached to each end of the chain. Two load chains are thus formed, one raising and the other lowering.

Capacities of air-operated hoists range from about 250 to 20,000 pounds, and lifts up to 60 feet.

Places where overhead trackage cannot be permanently erected can be serviced by jib cranes, which are short lengths of track mounted so they can be swung in arcs up to 360 degrees. This type of equipment is also used as movable extensions of overhead track systems to take care of loading docks or to cross railroad tracks. Jib cranes are also convenient for all kinds of localized handling. Every section of metalworking shops can be serviced by overhead transportation by jib cranes working with monorail systems and overhead traveling cranes.

Two electrified interlocking jib cranes in one plant simplify the loading of long steel frames into railroad cars or trucks. Equipment is so arranged that the frames can be easily piled at right angles with the main tramrail runway inside the building.

While jib cranes equipped with electric hoists can be extremely helpful in certain restricted handling jobs, gantry cranes are able to handle other jobs to advantage. They are useful in operating locally under heavier traveling cranes and relieving them of much of the lighter work. Operated in connection with a stationary tramrail system, they greatly reduce rehandling of loads.

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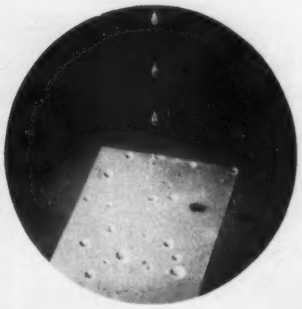
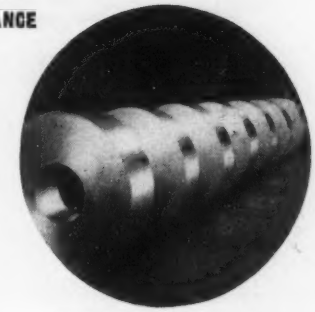
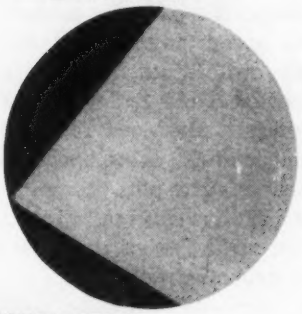


CORROSION RESISTANCE



UNIFORMITY

GAUGE ACCURACY



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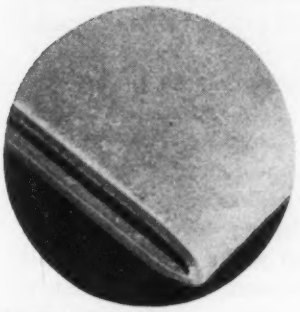
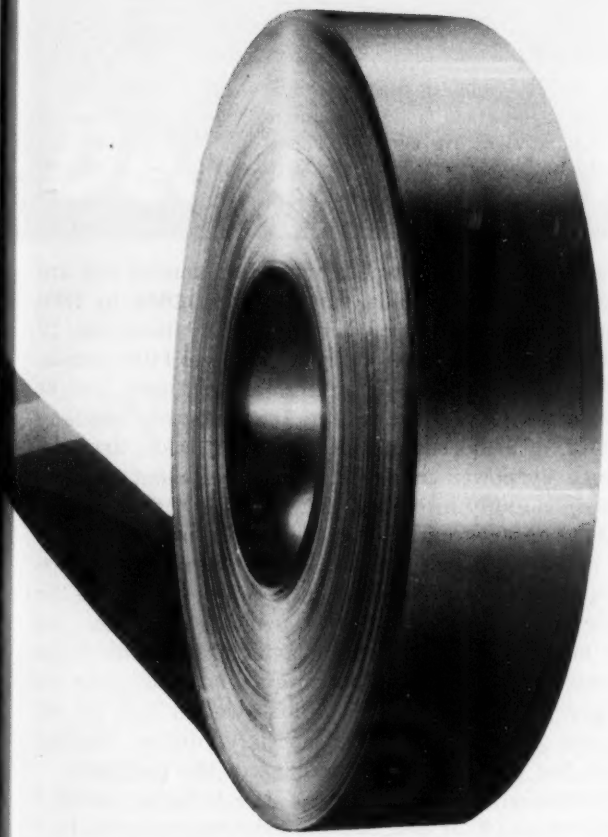


COATING ADHERENCE



the Cold Metal Products co.

YOUNGSTOWN 1, OHIO

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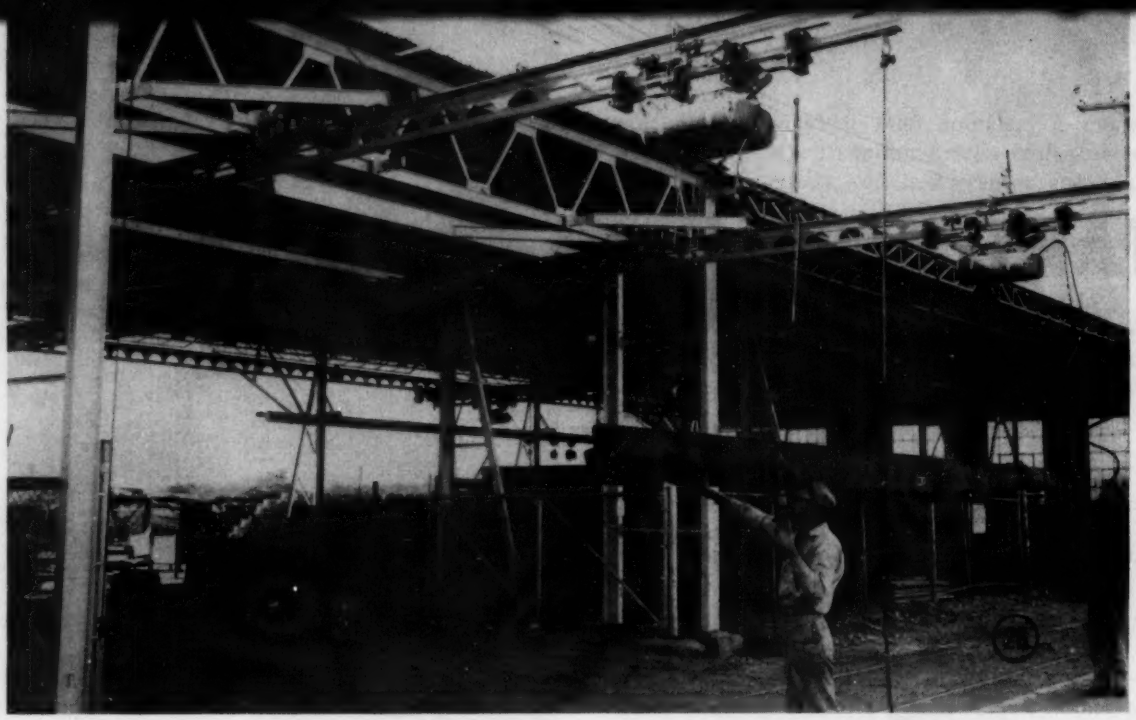

Fig. 26 — These two electrified interlocking jib cranes facilitate loading of railroad cars. Individual hoist carriers are run onto them and used individually or together. Courtesy Cleveland Crane & Engineering Co.

Example of specialized utilization of overhead equipment is an automatic carrier developed recently for transporting 15 cubic-foot baskets of metal chips weighing 1000 pounds from oil extractor to any one of eight storage bunkers. The carrier automatically delivers, empties by turning the basket over, and returns. Station to which load is to be dispatched is preselected, using a dial indicator located on the carrier.

Self-propelled Cranes — Self-propelled cranes, on several types of mobile mountings, and built in various sizes and lifting capacities, handle many classes of materials, such as scrap, ingots, bar steel and small castings, usually out-of-doors. Every part of an outside yard can be reached and served by this type of equipment which is designed for unloading, sorting, stockpiling and loading, using special attachments. Dragline buckets, grapples, tongs, clamps, slings, special hooks, skull crackers, grabs, skips, magnets, hairpin hooks, are a few of the attachments in general use on self-propelled cranes.

With all kinds of overhead handling equipment, ordinary loads and cumbersome, odd-shaped materials can be handled by special attachments. Among these are sheet lifters, bar stock lift beams, hopper-type coal buckets, standard tongs for die blocks, etc., barrel grabs, equalizer level lifts, mechanical sheet lifters, plate grabs, pipe shaft tongs, crane and hoist scales. The steel industry alone requires an impressive list of auxiliary handling aids such as stripper and ingot mold tongs, ingot lifters, pipe shaft tongs, grabs. Facilities of this kind make basic materials handling equipment infinitely more versatile than it would otherwise be.

Standard round and rectangular lifting magnets are used chiefly with overhead and mobile cranes, in steel mills, lifting ingots, billets, handling pig iron and scrap in foundries, rails and car wheels in railroad shops and unloading cars and trucks in scrap yards. Custom-built magnets are manufactured to handle hot ingots, pig iron and rolls of hot strip steel, as well as hot slabs. Representative lifting magnets range from about 36 to 65 inches in diameter and are used for carrying loads varying from 1600 to 7800 pounds, approximately. Smaller round magnets, 12 to 29 inches in diameter carry from 180 to 1400 pounds.

Freight Elevators—In multifloor factories, freight elevators form a vital part of the materials handling system. As more and more handling tasks are performed by power trucks, elevator equipment must be correspondingly altered to take care of the additional loads. A 500-pound hand truck, for instance, pulls its relatively small pay load into the elevator, distributing the load gradually. A power truck, on the other hand may weigh 8000 pounds, or more. Its pay load is proportionately heavier. The power truck travels relatively fast, stops quickly, delivering its freight with an impact. The load weight may be off-balance part of the time, especially during loading, when the full load is at the edge of the platform.

Structural characteristics of the building, number of floors and floor heights, quantity, weight, size, type of unit and method of loading, and operational cycle are some of the factors to be considered in planning for freight elevator service.[18] Capacity of standard elevator equipment is from 2500 to 10,000 pounds.

Since industrial truck loading increases the stresses in elevators, continued use of power trucks with an elevator not designed for such use might be dangerous.

(To be continued)

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17. A. R. Walkley, Shaw Box and Hoist Division, Manning, Maxwell

Nickeloid Metals Provide Both a New Material and a New Production Method

CARL C. STRUEVER
Gen. Mgr., American Nickeloid Company
Peru 1, Illinois

NICKELOID METALS provide two important sales advantages: First, lower unit costs; second, greater product beauty. They offer both a material and a production short-cut method of interest to every designer, every production and sales executive.

GREATER ECONOMY

NICKELOID METALS are *pre-finished* metals produced in sheets or coils and therefore more economical to use. No further plating, polishing or other finishing is required. The manufacturer need only fabricate to form a finished part or product. For normal production, NICKELOID METALS can be blanked, formed, drawn, stamped, bent, soldered, riveted or spot welded, without damage to the fine finishes. And for severe fabricating conditions the metal can be further provided with a "Mar-Not" protective coating — either a pressure sensitive paper, or a stripping type plastic film, either of which readily peels off after fabrication.

WIDE RANGE OF METALS

NICKELOID METALS are electroplated coatings of copper, brass, nickel or chromium on base metals such as zinc, steel, copper, brass or aluminum. Each NICKELOID METAL therefore is a combination that provides desirable properties such as surface beauty, rigidity, heat-resistance and other qualities. A full range of gauges and tempers allows for almost endless applications of decorative and functional use.

FULL DESIGN RANGE

With so much variety in finishes, basic metals, patterns and tempers — NICKELOID METALS provide endless opportunities for creative design. The interesting patterns can keynote a product design, or blend perfectly with an overall design, both for trim and utility. Designers will find in these metals inspiration for lending an added touch of beauty to any product.

APPLICATIONS ARE BROAD

Wherever bright, lustrous metal is desirable, and it almost *always* is, NICKELOID METALS can be considered. They are widely used in packaging, hardware, trim, stampings, housewares, signs, appliances, novelties.

LATEST STUDIES AVAILABLE

Available on request are late, complete studies on the properties, applications and latest fabrication techniques for NICKELOID pre-plated METALS, including metal samples. Manufacturers are invited to write for these complete studies as an aid to designing for lower production costs and increased salability.

AMERICAN *Nickeloid* COMPANY— Peru 1, Illinois

& Moore Corp., "Developments in Crane, Hoist and Elevator Design and Application," Materials Handling Conference, Philadelphia, Jan. 10-14, 1949.

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Partial List of Manufacturers

HOISTS, CRANES MONORAIL SYSTEMS

Alliance Machine Co.
Alliance, Ohio

American Engineering Co.
Aramingo & Cumberland Sts.
Philadelphia 25, Pa.

American Hoist & Derrick Co.
St. Paul 1, Minn.

American MonoRail Co.
13102 Athens Ave.
Cleveland 7, O.

Baker-Raulang Co.
2167 W. 25th St.
Cleveland 13, O.

Bedford Foundry & Machine Co.
Bedford, Ind.

Browning Crane & Shovel Co.
E. 162nd St. & Waterloo Rd.
Cleveland 10, O.

Victor R. Browning Co., Inc.
Willoughby, O.

Chisholm-Moore Hoist Corp.
118 Fremont St.
Tonawanda, N. Y.

Cleveland Tramrail Div.
Cleveland Crane & Engineering Co.
1125 E. 283rd St.
Wickliffe, O.

Conco Engineering Works Div.
H. D. Conkey Co.
Mendota, Ill.

Cullen-Friestedt Co.
1308 S. Kilbourn Ave.
Chicago 23, Ill.

Curtis Pneumatic Machinery Div.
Curtis Mfg. Co.
1996 Kienlen Ave.
St. Louis 20, Mo.

Detroit Hoist & Machine Co.
Detroit, Mich.

Electro Lift Inc.
30 Church St.
New York 6, N. Y.

Euclid Crane & Hoist Co.
1365 Chardon Rd.
Euclid 17, O.

Ford Chain Block Div.
American Chain & Cable Co., Inc.
2nd & Diamond Sts.
Philadelphia 22, Pa.

Galland-Henning Mfg. Co.
2747 S. 31st St.
Milwaukee 7, Wis.

Hanna Engineering Works
1765 Elston Ave.
Chicago 22, Ill.

Harnischfeger Corp.
4411 W. National Ave.
Milwaukee 14, Wis.

Hill Acme Co.
6400 Breakwater Ave.
Cleveland 2, O.

Hughes-Keenan Co.
585 Newman St.
Mansfield, O.

Independent Pneumatic Tool Co.
600 W. Jackson Blvd.
Chicago 6, Ill.

Industrial Brownhoist Corp.
Bay City, Mich.

Industrial Equipment Co.
Chicago, Ill.

Ingersoll-Rand Co.
11 Broadway
New York 4, N. Y.

Keller Tool Co.
Grand Haven, Mich.

Lisbon Hoist & Crane Co.
Lisbon, O.

Louden Machinery Co.
Fairfield, Iowa

Michigan Power Shovel Co.
Benton Harbor, Mich.

Morgan Engineering Co.
Alliance, O.

Northern Engineering Works
2615 Atwater Ave.
Detroit 7, Mich.

Northwest Engineering Co.
135 S. LaSalle St.
Chicago 4, Ill.

Ohio Locomotive Crane Co.
Bucyrus, O.

Orton Crane & Shovel Co.
608 S. Dearborn St.
Chicago 5, Ill.

Osgood Co.
Marion, O.

Reading Chain & Block Corp.
2102 Adams St.
Reading, Pa.

Robbins & Myers, Inc.
Springfield, O.

Roeper Crane & Hoist Works Inc.
1722 N. 10th St.
Reading, Pa.

Shaw Box Crane & Hoist Div.
Manning, Maxwell & Moore Inc.
Muskegon, Mich.

Shepard Niles Crane & Hoist Corp.
358 Schuyler Ave.
Montour Falls, N. Y.

Silent Hoist & Crane Co.
849—63rd St.
Brooklyn 20, N. Y.

Standard Pressed Steel Co.
Box 579
Jenkintown, Pa.

Thew Shovel Co.
Lorain, O.

Unit Crane & Shovel Co.
6411 W. Burnham St.
Milwaukee 14, Wis.

United States Steel Supply Co.
P.O. Box MM
Chicago 90, Ill.

Wellman Engineering Co.
7000 Central Ave.
Cleveland 4, O.

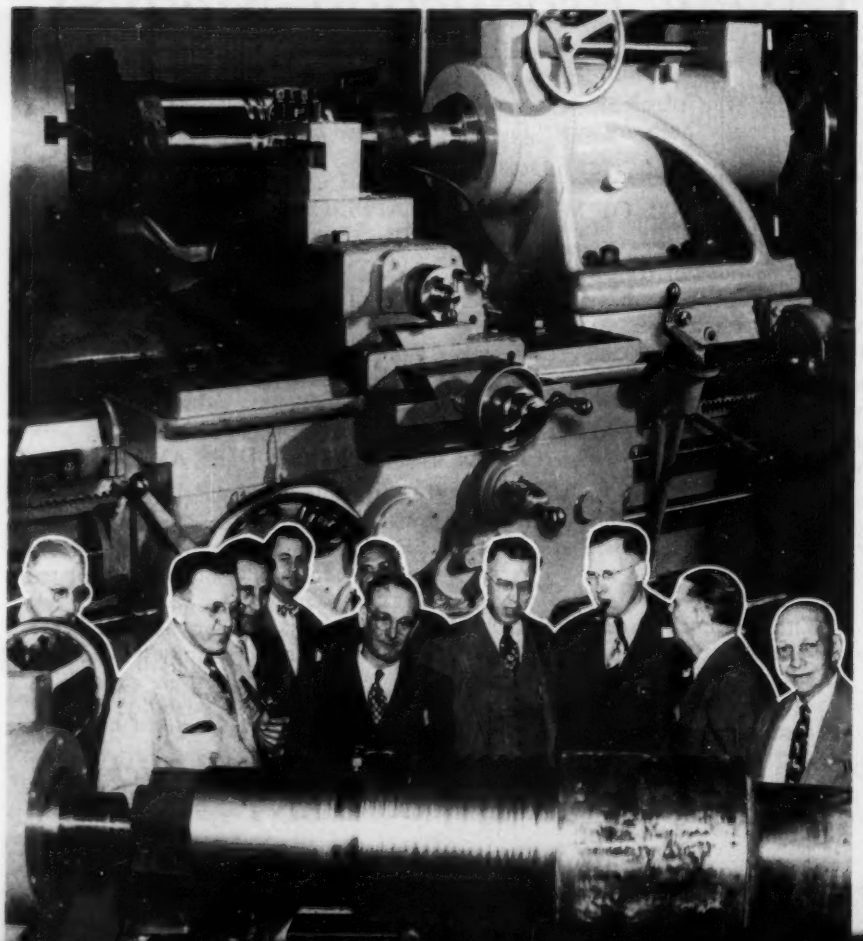
Whiting Corp.
Harvey, Ill.

Yale & Towne Mfg. Co.
4530 Tacony St.
Philadelphia 24, Pa.

ROLL MACHINING TIME

. . . cut two-thirds by template controlled lathe

COMBINING improvements in carbide tools with further refinements in Monarch-Keller electrical contouring controls, engineers at Monarch Machine Tool Co., Sidney, O., have produced a machine which in recent tests before steel mill roll experts has demonstrated that it can reduce by two-thirds or more the present machining time on even the toughest chilled cast iron rolls. So substantial is this saving that for many mills it is estimated that the new lathe will pay for itself in 18 months or less.



The lathes will be built in two sizes. Production already has started on the smaller, or 32-inch, machine, which is illustrated at left above. The 60-inch machine, shown in operation below, is designed to handle the largest rolls used in the steel industry and will be in production later this year.

In the new Monarch roll turning contouring lathe, standard carbide turning tools stand up successfully at speeds as high as 110 surface feet per minute. Shape of the roll is precisely controlled by a tracer unit which operates both carriage and tool slide feed through the medium of magnetic clutches.

Since turning of rolls is by template-controlled single point tools, the hundreds of form tools required in connection with conventional methods of roll turning no longer will be required. Instead, a round carbide tool will be used to produce literally thousands of different shapes. As long as the radius on the tool is smaller than the smallest radius required on the roll, the same tool can be used over the entire operation.

According to Monarch engineers, the insert-type of carbide tool has proved most satisfactory. This has a perfectly cylindrical carbide tip, mounted vertically. It is not necessary to have tools ground especially for individual contours since the template, through the medium of electrical control, causes the round tool to reproduce accurately any shape required. It is estimated that six or eight turning tools will cover all of the shapes needed in any roll shop.

"King Size" Power-Shovel Bucket made of **J&L HEAT-TREATED JALLOY STEEL** still going strong after full year's gruelling service!

J&L STEEL

Performance record on this Marion No. 5561 power shovel proves high-impact and abrasion resistance of J&L heat-treated JALLOY
BIG SCOOP!

—40 CUBIC YARDS

of earth and rock in one "scoopful." This monstrous power-shovel bucket excavates 10 acres to a depth of 50 feet *in a month.*

Working *day and night* it removes overburden on a large strip mining operation in southern Illinois. As it digs its way through some 15 feet of limestone, 15 feet of shale and 20 feet of clay, it is subjected *continuously* to severe abrasion and impact.

Yet the J&L *heat-treated* JALLOY STEEL on the bucket *has given more than a year of service!*

To date more than 6,000,000 cu. yds. have been excavated, but the excellent appearance of the J&L heat-treated JALLOY STEEL indicates a reasonable expectancy of *many more* months of service before replacement is necessary.

J&L *heat-treated* JALLOY STEEL was developed for just such uses as this—where steel must withstand extreme abrasion and heavy shock for long periods of time. Its outstanding wear-resistant properties make it especially useful for Scrapers . . . Rock crushers . . . Bulldozers . . . Truck bodies . . . Dump cars . . . Chutes . . . Power-shovel buckets.

Wherever wear and abrasion are limiting factors in the life of equipment, you'll find it profitable to use J&L *heat-treated* JALLOY STEEL. May we send you the booklet mentioned in the coupon?

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404 Jones & Laughlin Building
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☐ Please send me your booklet: "JALLOY—J&L ALLOY STEEL."

☐ Do you recommend Jalloy for:

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COMPANY _____

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From its own raw materials, J&L manufactures a full line of carbon steel products, as well as certain products in OTISCOLOY *and* JALLOY *(hi-tensile steels).*

PRINCIPAL PRODUCTS: HOT ROLLED AND COLD FINISHED BARS AND SHAPES • STRUCTURAL SHAPES • HOT AND COLD ROLLED STRIP AND SHEETS • TUBULAR, WIRE AND TIN MILL PRODUCTS • "PRECISIONBILT" WIRE ROPE • COAL CHEMICALS

MILL ROLLS STAINLESS RODS

At 2800 Feet Per Minute

Members and guests attending AISE Spring Conference inspect new alloy rod mill at Rustless plant at Baltimore and Bethlehem's new additions at Sparrow Point, Md. Abstract of technical papers presented at 2-day meeting follow

STEEL plant engineers from widely separated parts of the United States and Canada who attended the annual spring conference sponsored by the Rolling Mill Committee of the Association of Iron & Steel Engineers, Lord Baltimore Hotel, Baltimore, May 2-3, acclaimed this year's meeting as one of the best.

S. J. Cort, vice president, Bethlehem Steel Co., Bethlehem, Pa., was the principal speaker at the dinner Monday evening. A digest of Mr. Cort's paper was presented in last week's issue of STEEL, as well as other highlights of the 2-day meeting.

A digest of the technical papers presented at the morning sessions, follow:

New Rod Mill for Rolling Stainless Steels at Rustless, by E. T. Peterson, L. W. King and E. C. Peterson, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.: A feature of the 18-inch roughing mill is the cap which is secured to the housing posts by four heavy shear pins, rather than by cap bolts. Pin clearance is taken up by wedges. Thus, the usual cap-bolt arrangement, which contributes to mill stretch under rolling load, is eliminated and the rigidity of a solid housing is obtained. The top roll is held up by a spring arrangement in the window rather than by the conventional hanger bolts through the cap. The housing can be opened for roll changing by merely removing the wedges, two of the shear pins, and tilting the cap up on the other two. The rolls and chucks are then lifted out without further delay, and the cap never is removed from the stand.

The bottom screws are of stainless steel to avoid rusting from mill water and the gear box is totally enclosed.

In front of the mill at the approach table, is a disappearing stop, operated automatically from the tilting table, which prevents entry of a billet when the tilting table on the opposite side of the mill is up. In event that more than one bar is worked in this stand of rolls at a time, this feature relieves the operators of the necessity of timing the billet approach carefully, since the billet cannot enter prematurely and go under the tilting table.

Elaborate precautions must be taken to prevent scratching and rollers have been provided at many critical points where the bar would otherwise rub.

The feature of the installation is a 5-stand 10-inch continuous finishing mill with three horizontal and two vertical stands. This mill makes it possible to finish at speeds up to 2800 feet per minute which is double the maximum finishing speed for hand looping mills rolling stainless or alloy rods.

A 4 x 4-inch billet is rolled to a No. 5 rod in 260-pound coils. In large diameter rod, say ⅝-inch, 385-pound coils have been produced.

Sixty-eight out of 70 rollable analyses have been produced by this installation.

The mill crew amounts to 11 men. Production of 6 tons per hour of No. 5 rod and 6.3 tons per hour of ¼-inch rod is the average per 8-hour turn.

One of the problems of rolling stainless steels has been the necessity of rolling in a certain temperature range, often restricted. On the present mill it takes two minutes and 18 seconds from the furnace to the complete coil, rolling a 4 x 4-inch x 265-pound billet to ¼-inch rod.

A 265-pound 4-inch billet taken from the furnace at 2200° F will finish coiling at 1720° F when rolled to a ¼-inch rod; on the old mill a 110-pound 3-inch billet would finish coiling at 1500° F when rolled to a $\frac{5}{16}$-inch rod.

By eliminating the twist in the finishing stand by using roller twist guides throughout, and by careful roll design, the principal causes of surface defects have been eliminated.

Blooming Mill Operations at Keystone Steel & Wire Co., by William Herman, superintendent of rolling mills, Keystone Steel & Wire Co., Peoria, Ill.: This paper dealt with the history and operation of an old mill—the only one of its kind in existence today.

It was built in 1917 to roll the output of three 75-ton open hearth furnaces. Ingots have been rolled down to 1¾-inch billets in 25 passes for 20 years. In the last 12 years various other shapes and sizes have been rolled.

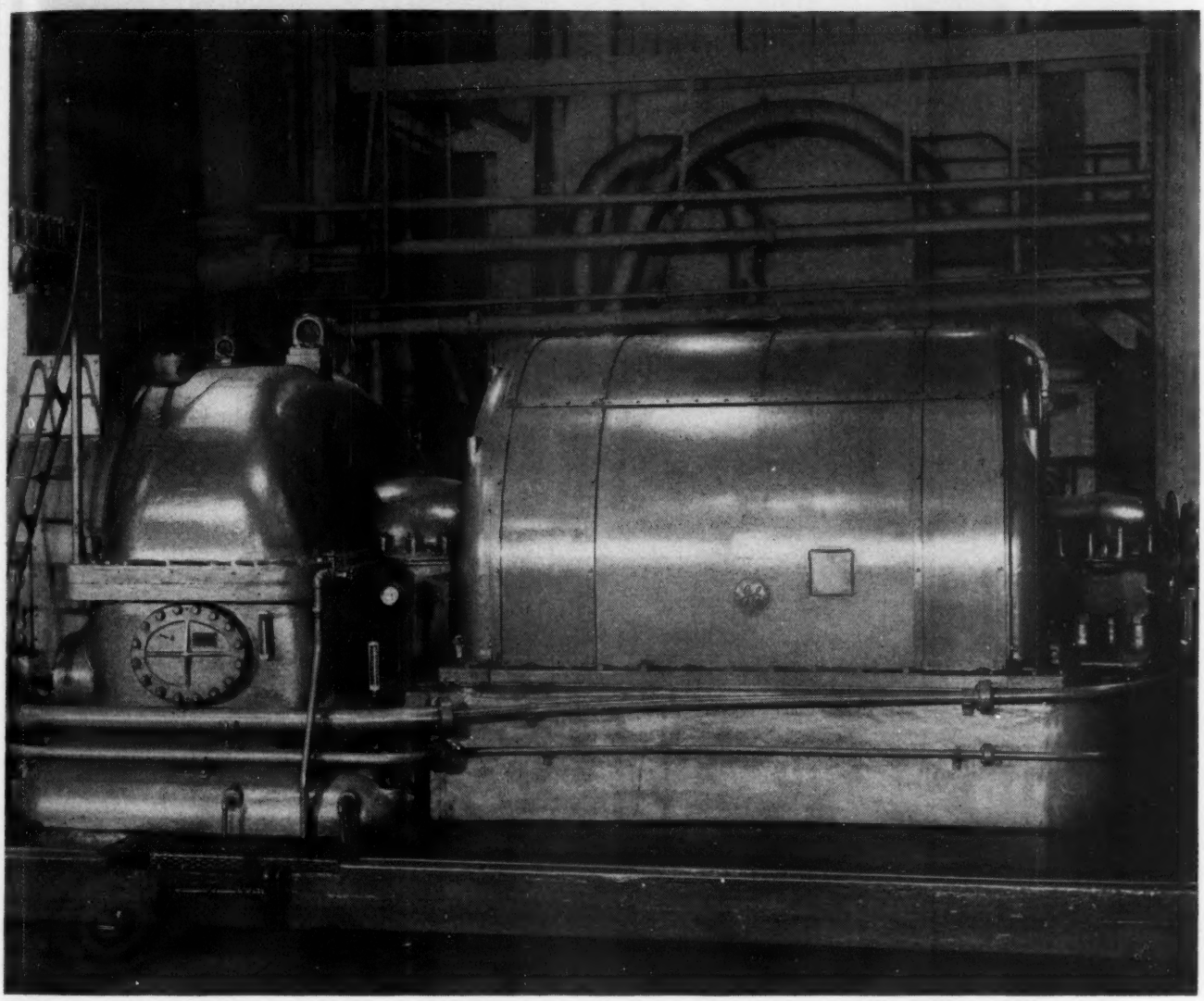
As production of the open-hearth shop increased, so did the output of the mill. Two long passes through the mill were eliminated by making one turnover on the rear side. This feature alone added 8 per cent to output.

Ingots are reduced in 21 passes to a $2\frac{3}{16}$-inch billet or to a 1¾-inch billet in 23 passes. Twenty ingots have been rolled in an hour. This is 3 minutes per ingot and the maximum that can be rolled, requiring 2½ minutes to break down, and ½-minute on the repeater. This amounts to 83 per cent of the time in the breakdown to 3½-inch bar, and 17 per cent of the time on the repeater. The mill is operated by a crew of 17 men.

Electric Equipment for High Speed 2-Stand Temper Mills, by R. E. Marrs, application engineer, Steel Mill Division, General Electric Co., Schenectady, N. Y.: The speaker described the electrical equipment for typical high-speed 2-stand temper mills operating at speeds as high as 5000 feet per minute. He cited the advantages gained by direct coupling of motors to either backup or work rolls. The paper described the essential electrical features of the mill control scheme making use of the rotating regulator as regulating unit for current, tension and voltage.

Power Supply and Electrical Features of a 68-inch Hot Strip Mill, by F. O. Schnure, electrical superintend

In the life-lines of this power plant...



...FIRE will meet with SUDDEN DEATH!

Fire will never get a chance to knock the generators out of commission in *this* power plant!

Two generators—rated at 12,500 and 7,500 KW—form the heart of the power supply equipment—and *both* are protected by a *single* bank of *Kidde* cylinders of carbon dioxide (CO_2). In case of fire in either generator, automatic directional valves send the CO_2 racing to the unit threatened.

First, a heavy discharge of CO_2 smothers any active flame in a matter of seconds—before damage to the insulation can spread. Then . . . a slower, continuing discharge maintains a high CO_2 concentration . . . *prevents a reflash.* Of course, the CO_2 does not corrode metal or harm insulation.

That's just one of the thousands of *Kidde** installations that are safeguarding equipment and materials all over the world. *Whatever* your fire protection problem, a Kidde representative will help you!

When you think of CO_2, call Kidde!

*Also known as "LUX"

The words "Kidde" and "Lux" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc.

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Kidde

Robins Gyrex Screen gives thrifty, dependable service on same installation since 1933

For more than 15 years the Robins Gyrex Screen pictured above has given low-cost service at the Mohawk Mining Co., Kittanning, Pa.

"It just runs on and on!" says D. H. Turner, Mohawk president.

Such long service is typical of what you can expect from Robins Gyrex Screens. You can use them for a wide variety of sizing or separating jobs—for coal, coke, gravel, stone, sand, rock, ore and many bulk materials.

Developed by Hewitt-Robins, the Gyrex vibrating screen is extremely versatile. It can separate as many as six different sizes at one time. It can size anything from fine hair to coarse rock. And it can handle hundreds of tons of bulk material every hour.

Once *you* install a Gyrex Screen, you will soon discover these five advantages:

1. Smooth operating. Has powerful vibration within itself. Yet *does not vibrate* the building or supports.

2. Versatile. Available in a weight to meet any class of service—a size to solve every problem. More than 300 models and styles.

3. Economical. Uses minimum of power per ton of material screened.

4. High capacity and efficiency. Uniform positive motion and correct centrifugal action.

5. Long life, low maintenance cost. All bearings super-sealed. All permanent connections electric-welded. All service connections jig-drilled for fitted bolts.

ROBINS

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Consult Robins now. There's a Gyrex Screen to meet *your* exact needs.

SEND TODAY for Robins Bulletin No. 115-A. Fully illustrates and describes features, advantages and benefits of efficient Gyrex Screens. Address Robins Conveyors Division, 270 Passaic Avenue, Passaic, New Jersey.

ROBINS CONVEYORS DIVISION **HEWITT-ROBINS INCORPORATED**

For this Robins Screen or for any screen... always specify

ROBINS Screen Cloth

1 Needs less changing. Robins Super-Gyraloy Screen Cloth increases the time between screen cloth changes.

2 Increases resistance to abrasion. Super-Gyraloy Screen Cloth is made of specially blended alloy steel wire. Its heat treatment and micro-structure increase resistance to abrasion without sacrificing ductility.

In fact, a wire of this cloth can actually be bent around its own diameter without fracture.

Robins Super-Gyraloy Screen Cloth is tough, hard, stiff . . . yet elastic.

ROBINS SCREEN CLOTH

SEND TODAY for Bulletin No. 113. Fully describes Robins Super-Gyraloy Screen Cloth, 3/16" to 6" openings, made from #12 gauge wire to 5/8" rod in square and rectangular openings, flat top and non-blind weaves. Also in Gyraloy (spring steel), stainless steel, Monel metal or brass in any standard diameter of wire. Robins Conveyors Division, 270 Passaic Ave., Passaic, New Jersey.

HEWITT-ROBINS INCORPORATED

ent, Bethlehem Steel Co., Sparrows Point, Md.: Hot strip mills having become fairly well standardized, there was not much in this mill except its size to present problems of electrical distribution. The paper discussed how this was accomplished by applying load centers.

A flying shear directly driven by a single motor from variable voltage under electronic control is the first of its kind and was explained by the author.

Main motors are of the synchronous type, built with high pullout torque.

Main Drive Motors for a 68-inch Hot Strip Mill, by H. W. Bartling, steel mill section, Allis-Chalmers Mfg. Co., Milwaukee: The 68-inch mill used one slab per ingot, the piece being 6½ inches thick by 22 feet long, weighing 450 pounds per inch of width.

The roughing train of 5-stand reduces a 6½-inch slab to 0.730-inch. Carried on through the 6-stand finishing mill, the last stand delivers 18 gage material. Delivery speed ranges from 1800 to 2000 feet per minute.

The compact nature of the finishing mill motor permits the use of a downdraft recirculating system of ventilation giving the decided advantage of a cool motor room. Covers of all motors of the finishing mill train, the generators of the main supporting motor-generator sets and the direct-current unit of the excitor set are designed for downdraft ventilation. Total heat to be absorbed in this cooling system approximates 2100 kilowatts.

The 1500-kva rectifier unit, which provides power for the mill supply circuit, is unusual in that there are two only 750-kva rectifiers operating from a single inert gas-filled transformer. Power is transmitted through 4000 ampere feeders with an 8000-ampere tie feeder to another part of the mill.

Roll Design of Small Shapes, by W. H. Mohler, superintendent, roll turning department, Carnegie-Illinois Steel Corp., McDonald, O.: The straight, continuous mill has definite limitations for rolling special shapes. Hand-fed mills in which the last end of the bar enters the succeeding pass are the most flexible although not always the most productive. Housings must be equipped for suitable up-and-down adjustment, lateral and cross axis alignment, and with suitable entry and delivery guide appurtenances.

Experience has shown that all mills have limitation of sizes and shapes of products beyond which operations become unprofitable. Limitation as to depth of passes which affect the strength of the roll and width and which also is dependent on the billet size, must be determined.

Thickness of the finished bar, finishing temperature, analysis of materials to be rolled, must be considered. The designer usually establishes limitation on details like taper, size of billets, thickness and length of stems, flanges and other features that affect the production of salable bar.

Design and Performance of Modern Large Rotary Furnaces, by A. F. Kritscher, development engineer, National Tube Co., Pittsburgh: One of the characteristics of a rotary hearth furnace is the relatively high temperature of the hearth (approximately 1750° F) upon which the cold steel is charged.

The most important factor in a single heat control arrangement is the location and size of the burners determined by the type and amount of material to be heated.

In the most recent design, the rotary furnace has been divided into five separate zones, each section baffled from its neighbor, and each zone equipped with automatic combustion, pressure and temperature control. Each unit is at a progressively higher temperature and the steel is "step heated" to each furnace temperature. By this means, the steel never assumes a temperature greater than the section in which it lies. Since the last two heating sections are smaller than the others, the steel is never at the final forging temperature very long.

The rotary hearth furnace can handle alloy and high-carbon rounds even though the cold steel is placed in a hot hearth. Present furnaces have greater capacity than originally calculated and need not be of such a large size.

Planned scheduling of steel charge is one of the determining factors for economic results.

An instrument to divulge the true temperature of heated steel in production operation is sorely needed by the steel industry since there is such complete disagreement as to the actual steel temperature when measured with existing instruments.

Electrical Equipment for a Modern Rod Mill, by F. R. Burt and R. W. Moore, metalworking section, Westinghouse Electric Corp., East Pittsburgh, Pa: There is a definite trend toward the use of continuous mills in the production of rod. As

(*Please turn to Page* 116)

FUNDAMENTALS OF STEELMAKING

NUMBER **7** OF SERIES

Another in a continuing series of articles on the making of steel and finishing it into products ready for the consumer. Each article is written by an outstanding authority in his particular field.

By PHILIP S SAVAGE
Vice President
Donner-Hanna Coke Corp.
Buffalo

Production of Metallurgical Coke

AND RESULTANT COAL CHEMICALS

Today in a modern coke plant, by using centrifugal exhausters and placing saturators, tar extractors and other apparatus outside, insulated from the weather where necessary, buildings for chemical recovery have been cut down more than one-half in size

PART III

FROM the suction main gas enters the primary coolers. These are of two general types—direct, and indirect. The direct cooler is one where a cooling medium (weak ammonia liquor) is directly sprayed into the hot gas. This type of cooler is definitely indicated where cooling water is dirty or corrosive, or in short supply. It consists of a short tower or series of towers equipped with grids, usually made of wood. Ammonia liquor, cooled in coils over which water drips, is sprayed at the top of the tower and flows downward countercurrent to the warm gas. Lighter tar containing a high percentage of naphthalene is condensed and carried down by the spray liquor. It is usually returned to the separating tank.

The indirect cooler is simply a large tubular condenser. Water passes through the tubes counterflow to the hot gas, while the gas is baffled in the opposite direction around the tubes. Light tar containing a high percentage of naphthalene and ammonia liquor is condensed, and here again it is usually returned to the separating tank where it mixes with the flushing liquor. The indirect cooler is very simple, and it is clearly indicated where plenty of good clean water is available. Use of galvanized or special analysis steel tubes is recommended on the first gas passing where corrosion is more active due to high temperature.

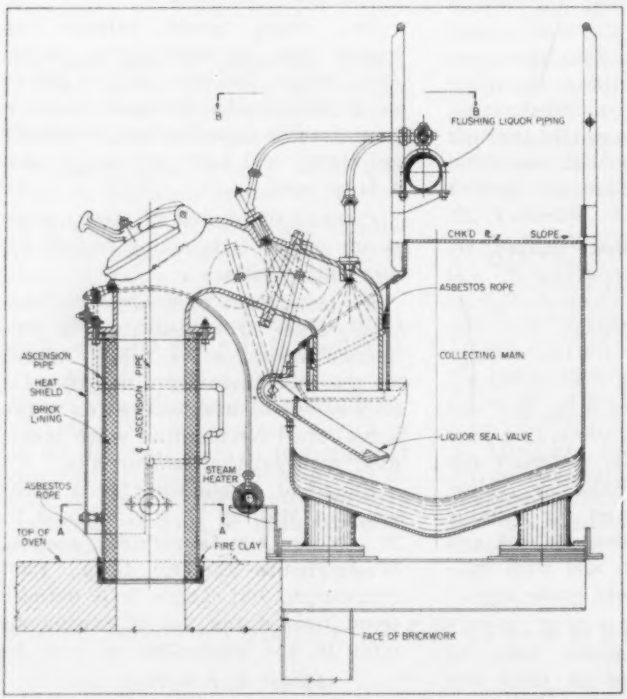

Fig. 18—Section of ascension pipe and collecting main showing modern damper and liquor spray

Condensate from the primary cooler of either type is considerably richer in naphthalene, tar acids and creosote oil. It is light enough to separate easily and rapidly, and should be kept separate as its value to a tar distiller is distinctly more than tar condensed from the mains. It is often economical to burn the heavy tar without distillation, and distill or sell only the light tar. I am sure that future coke plant designers will progress further than we have to date in the selective condensation of tar products. Tar from gas exhauster and tar precipitators can likewise be kept separate, and contain even more naphthalene than primary cooler tar. The two combined, while constituting about one-third of the total tar, contain more than 75 per cent of the naphthalene, and more than one-half of the tar acids.

Practically all modern coke plants are equipped with electrical tar extractors of the Cottrell precipitator type. These can either be placed on the suction side between the primary coolers and exhausters, or on the pressure side between the exhauster and sulphate of ammonia saturator. If tar precipitators are in parallel, it is very necessary that a simple measuring device such as the pitot tube be put in the inlet or outlet of each precipitator together with a

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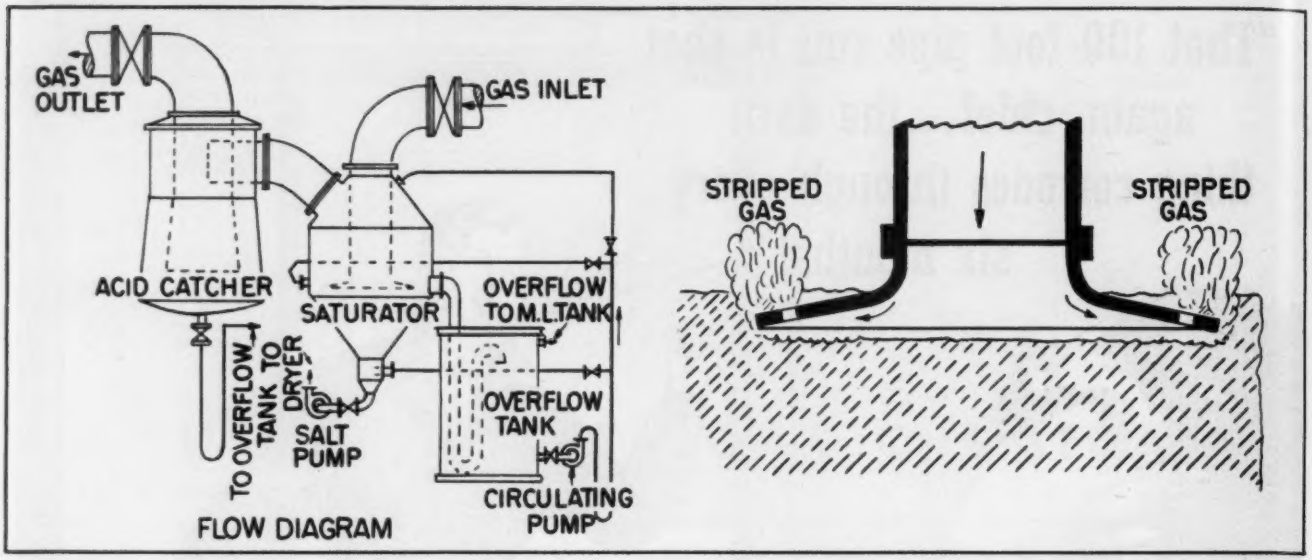


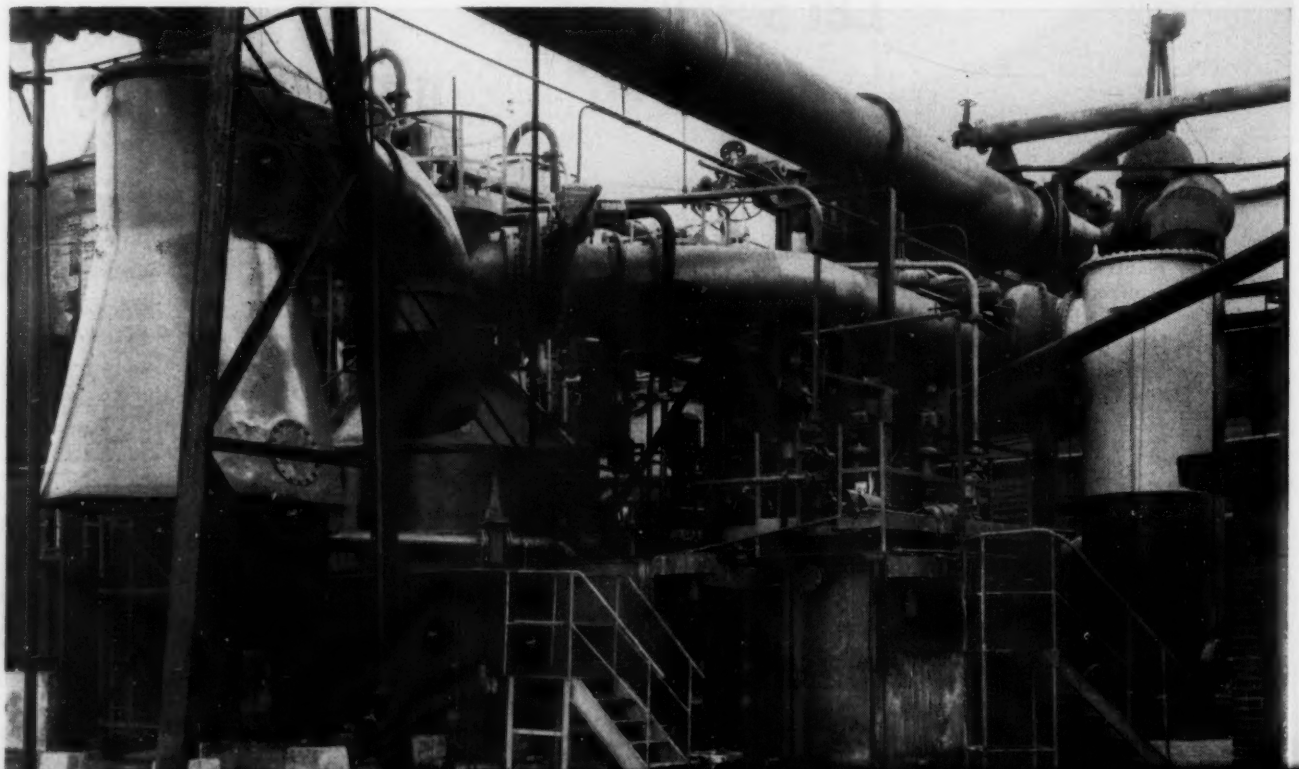
Fig. 19—Flow diagram of a low-differential ammonia saturator of the crackerpipe type and close-up of crackerpipe section

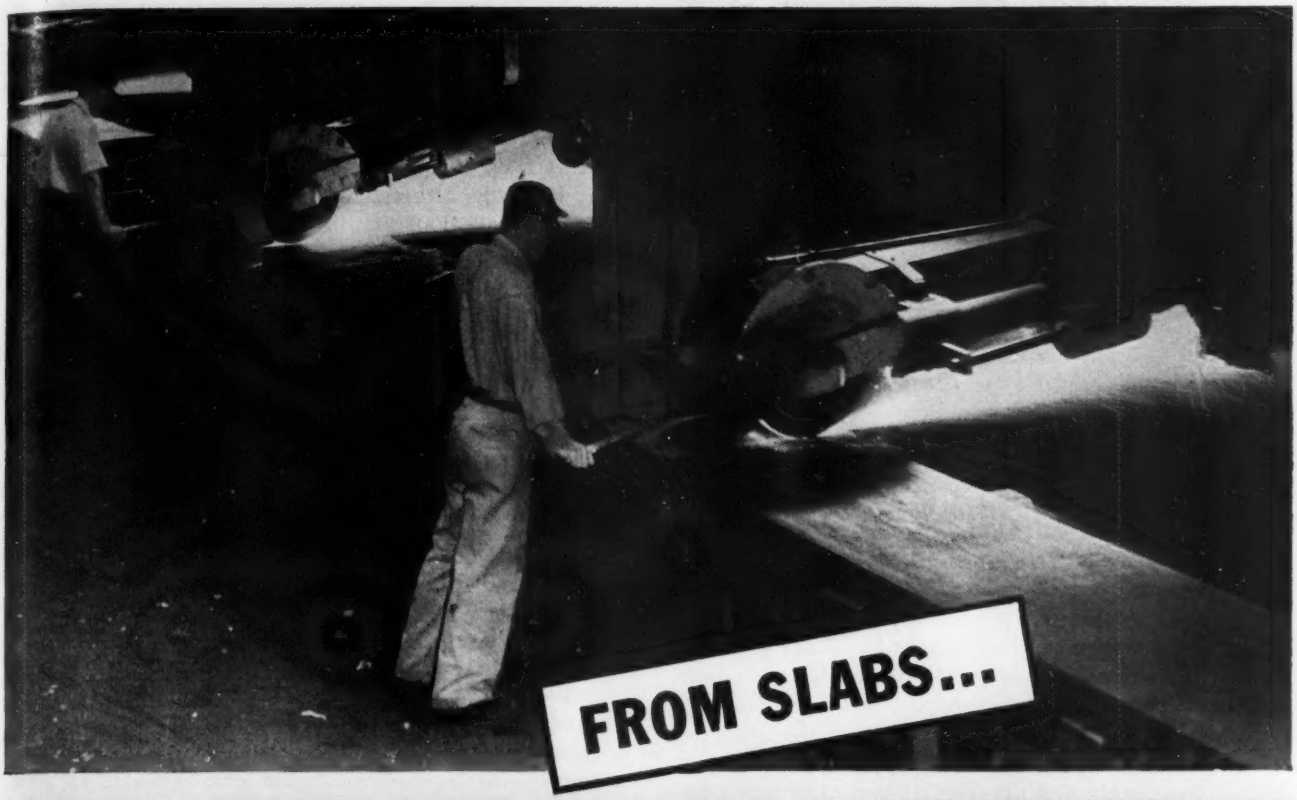
butterfly damper valve that will allow proper distribution of gas between precipitators. These butterflys can be manually or automatically controlled.

In most of the older coke plants, gas pumps called exhausters of the positive type, driven by steam engines, are almost universally used. Many of these old exhauster units are still running, and have proved very reliable and economical. However, the saving in space made possible by the centrifugal exhauster with a steam turbine drive, together with the fact that the centrifugal machine is in itself an effective tar extractor, has caused the centrifugal exhauster to be almost universally used in newer installations. Better materials and more rugged construction have largely overcome high maintenance costs of early centrifugal machines.

Fig. 20—Modern spray type saturator capable of handling more than 60 million cubic feet of gas daily

Gas leaving the exhauster is heated by compression from the 90°F at which it usually leaves the primary coolers to a higher temperature depending on amount of compression. A reheater usually installed as part of the tar extractor heats the gas before entering the sulphate of ammonia saturator to approximately 135°F. A sulphate of ammonia saturator is basically a very simple chemical apparatus, consisting of an acid-proof tank either lead-lined steel, Monel metal, or stainless steel. In all saturators, except a few built during the last few years, coke oven gas containing ammonia vapor is passed through a so-called cracker pipe which breaks the gas into small bubbles as it passes through a bath of weak sulphuric acid. The ammonia reacts extremely rapidly with the sulphuric acid forming sulphate of ammonia $(NH_4)_2SO_4$,





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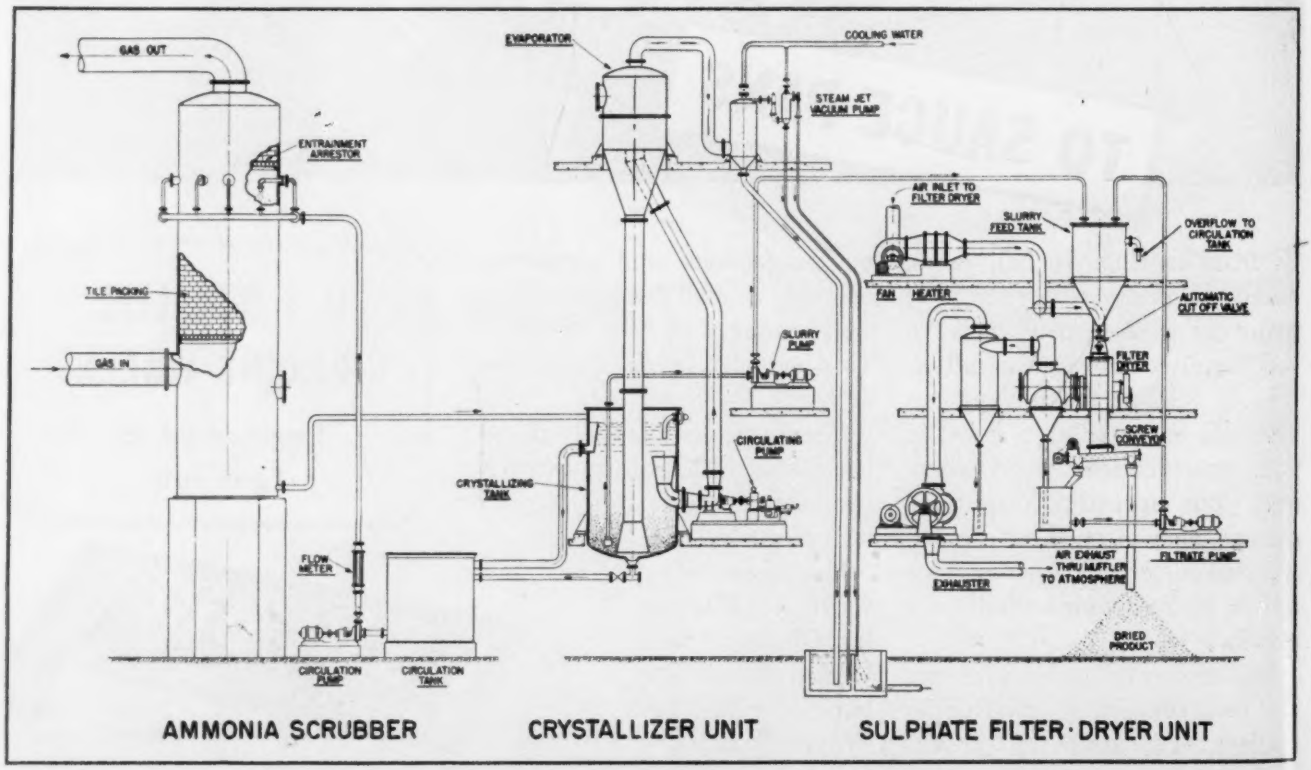
which is immediately dissolved in the bath. Acid is continuously added to maintain an acidity of approximately 5 per cent. When after a few hours of operation the bath reaches a saturation point, the acid continuing to react with the ammonia which now cannot be dissolved by the bath is, therefore, thrown out as a white crystal. The bath is continually circulated through a settling tank where crystals are dropped out and the saturated liquor, called mother liquor, returned to the saturator. Modern plants are all equipped with automatic dryers, of which there are several successful types available. Agitation of the saturator bath by mechanical, air, or gas agitators have a tendency to produce large crystals by retaining the crystals longer in the bath and allowing them to grow. Until a few years ago most saturators required a differential of more than 30 inches of water pressure to operate efficiently. Modern design of cracker pipe has cut this differential to only 4 or 5 inches, while still maintaining a scrubbing efficiency of better than 99 per cent. A low differential cracker pipe has also made it possible to handle enormous volumes of gas through very small saturator units. A 12 foot saturator can now be designed to handle more than 60 million cubic feet of gas daily. From this low differential saturator has lately been developed a complete spray type saturator which eliminates the cracker pipe altogether, and almost completely eliminates the saturator differential. Here again enormous quantities of gas can be handled with very small equipment, making it desirable and economical to use hard acid-proof metal rather than lead-lined steel.

A somewhat different type of sulphate-making equipment has been developed by another designer using the crystallizer principle rather than the saturator principle. An acid-proof scrubbing tower, packed with clay shapes, sprayed with a weak acid solution, extracts ammonia from the gas. On reaching saturation the sulphate crystals are precipitated by super-saturating in a vacuum type crystallizer. In this type of apparatus, crystals of almost any size may be made, although it is generally easier to make large crystals than small ones, which is the reverse of saturator operation where it is much easier to make small crystals than large ones. Recently the demand for sulphate of ammonia has been greatest in the mixed fertilizer industry, and here large crystals offer no advantage and sometimes are actually undesirable. For certain chemical uses, and for top-dressing, large size crystals offer a distinct advantage.

It is highly important after scrubbing the gas with acid in either a saturator or scrubber that all traces of acid be removed. An efficient acid separator is absolutely necessary following any type of saturator. A centrifugal or cyclone-type acid separator is generally used. If it is efficient, the slight traces of ammonia left in the gas will quickly neutralize any remaining acid, and acid-proof equipment is only required a few feet beyond the acid separator.

About 25 per cent of ammonia leaving the ovens is absorbed in the flushing liquor and becomes surplus weak ammonia liquor. As the ammonia liquor is, barring leaks, entirely from condensation of the moisture driven off the coal, the volume and strength of the weak product will vary with the coal moisture. Usually weak liquor contains about ½ to 1 per cent ammonia, of which 25 per cent is free ammonia or ammonia gas simply dissolved in water, while 75 per cent is fixed ammonia, principally ammonium chlo-

Fig. 21—Diagram showing ammonium sulphate crystal process



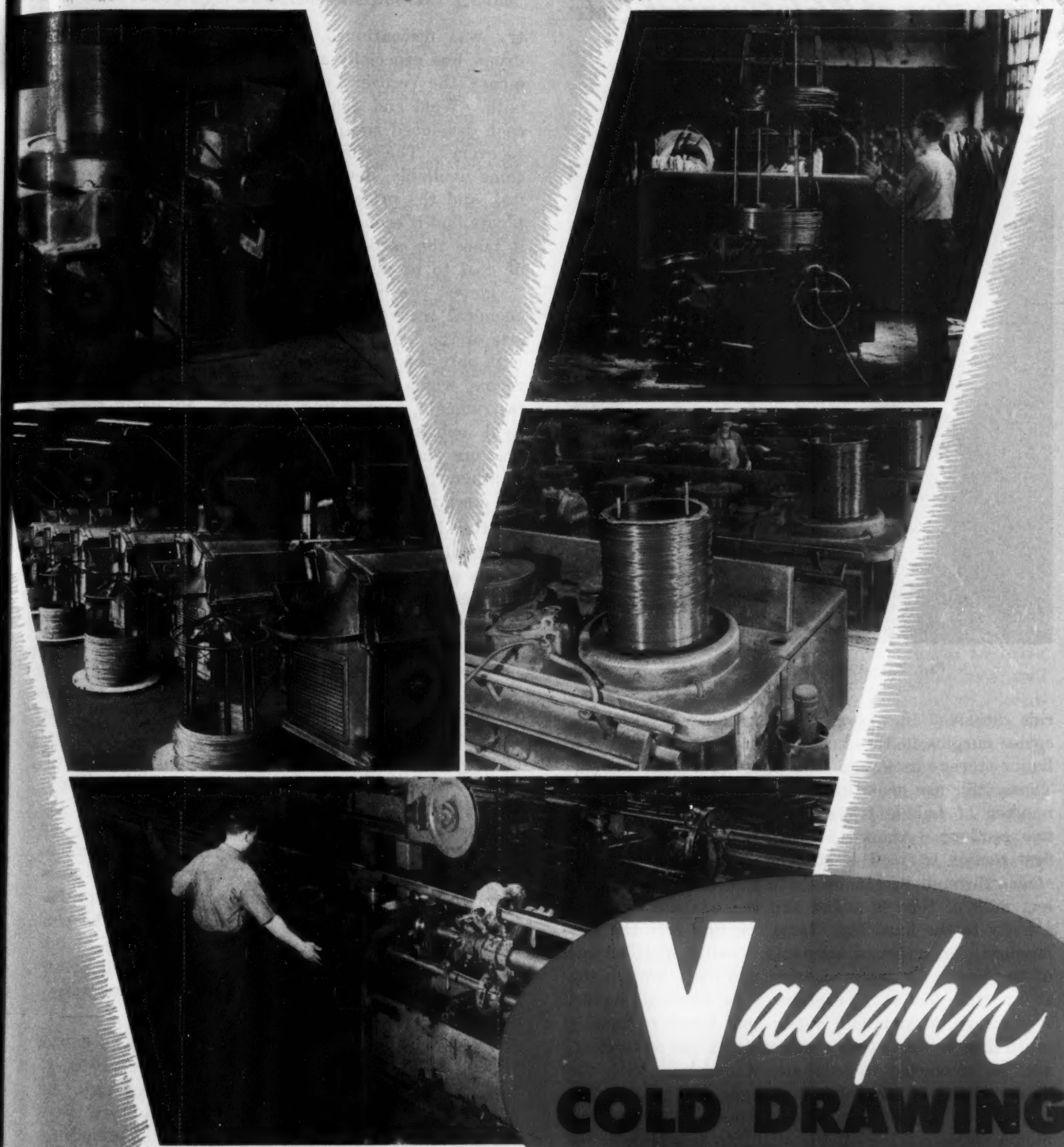


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Fig. 22—A pyridine refining still

ride dissolved in water. The weak liquor as it becomes surplus in the flushing system is pumped to a liquor storage tank, and from there to ammonia stills. These stills are usually built of cast iron containing a number of bubble trays, and are normally built in two sections. Ammonia liquor passing through the first section is freed of ammonia by blowing exhaust steam through it. In the bottom section of the free leg, milk of lime is added and the mixture flows by gravity to the fixed leg. Lime reacting with the ammonium salts releases ammonia which is distilled out of the liquor by steam passing upwards through the still counterflow to the descent of the ammonia liquor. A mixture of ammonia vapor and steam is usually piped directly back to the gas entering the saturators, and all converted to sulphate of ammonia with the ammonia vapor remaining in the gas. In some localities it has been economical to concentrate the ammonia vapor coming off the still into ammonia liquor of various grades and purity.

During World War I an intermittent process for recovering tar bases of pyridine series from saturator liquor was developed. The tar bases in the gas react with the acid bath to form sulphate, mostly pyridine sulphate. As the saturator bath gets older, the pyridine sulphate content becomes greater. This will go on until the sulphate and gas carries away an amount equal to that being absorbed. Demand for pyridine after supplies from Germany were shut off during World War I made it economical to periodically remove the bath from the saturators and extract the pyridine by neutralizing. When becoming neutral, the crude pyridine oil floated off the bath and was recovered. Shortly after the war the price of pyridine went so low that recovery in this country was discontinued. Development of the sulpha drugs, and especially sulphapyridine, again made necessary the recovery of pyridine from the saturator bath. Wald and Schreiber, with the help of others, each developed continuous systems of crude pyridine recovery. The chemical industry, as pyridine became available, developed many uses for this chemical, and the price has continued upward until most plants find it economical to recover pyridine, although it takes the carbonization of approximately 100 tons of coal to produce one gallon of the crude product.

One of the marked developments of modern coal chemical recovery plants has been the reduction in size of the buildings. Today modern plants are built with only the sulphate storage, booster and exhauster rooms, which usually contain the various pumps and instruments, housed in a building. By using centrifugal exhausters and putting saturators, tar extractors and other apparatus outside, insulated from weather, buildings for chemical recovery have been cut down more than one-half in size.

After leaving the acid separator, gas is piped to the final cooler. We have now recovered tar, ammonia and pyridine. The gas still contains in vapor form naphthalene and the benzol series of hydrocarbons, as well as smaller amounts of ammonium thiocyanate (hydrogen cyanide) and sulphur products. Recovery of benzol products, due to their inflammable nature, is kept separate from the recovery of tar and ammonia. The final cooler, generally considered the first step in this new train of chemical recovery, usually consists of a round tower from 60 to 100 feet high, containing widely spaced wooden grids. Water as cool as is available is sprayed at the top of the final coolers, working countercurrent to the gas and cooling it to at least 60°F where water temperature enables this to be done. Water spraying down through the gas condenses and carries away naphthalene which is crystallized from the gas by the cool water. As naphthalene has now become one of our most valuable coal chemicals, it is in modern plants carefully extracted from the water by various means and recovered as crude naphthalene.

From the final cooler the cool gas passes to benzol scrubbers. These are normally steel towers 10 to 15 feet in diameter and approximately 100 feet high. All of the older plants packed their scrubbers with bundles of wooden grids. Two, and sometimes three, scrubbing towers are placed in series. Debenzolized absorbent oil is sprayed against the gas flow in the last scrubber as the gas flows. From the bottom of this scrubber oil is repumped to the top of the next scrubber, working counterflow to the gas. As it leaves the first scrubber it has absorbed from 1½ to 3 per cent of light oil depending on the volume of absorbent oil used. In cool weather when it is possible to keep the gas and scrubbing oil cool, efficiencies of better than 95 per cent are possible. Summer temperatures often drop the efficiencies of the scrubbers as much as 10 per cent. Market price of benzol products has not justified to date the use of refrigeration in the recovery of benzol.

Scrubbing oil in America is universally a petroleum oil having a first drop of over 250°C, and a dry point

of between 350 and 400°C. It should show no cloud and be free flowing at 0°C. Tendency of many operators is to use too heavy an oil. Heavy oil, after it has been used and re-used, will not spread uniformly over the grids, and will not easily drop out polymerized styrene and indene resins which tend to gum up absorbent oil.

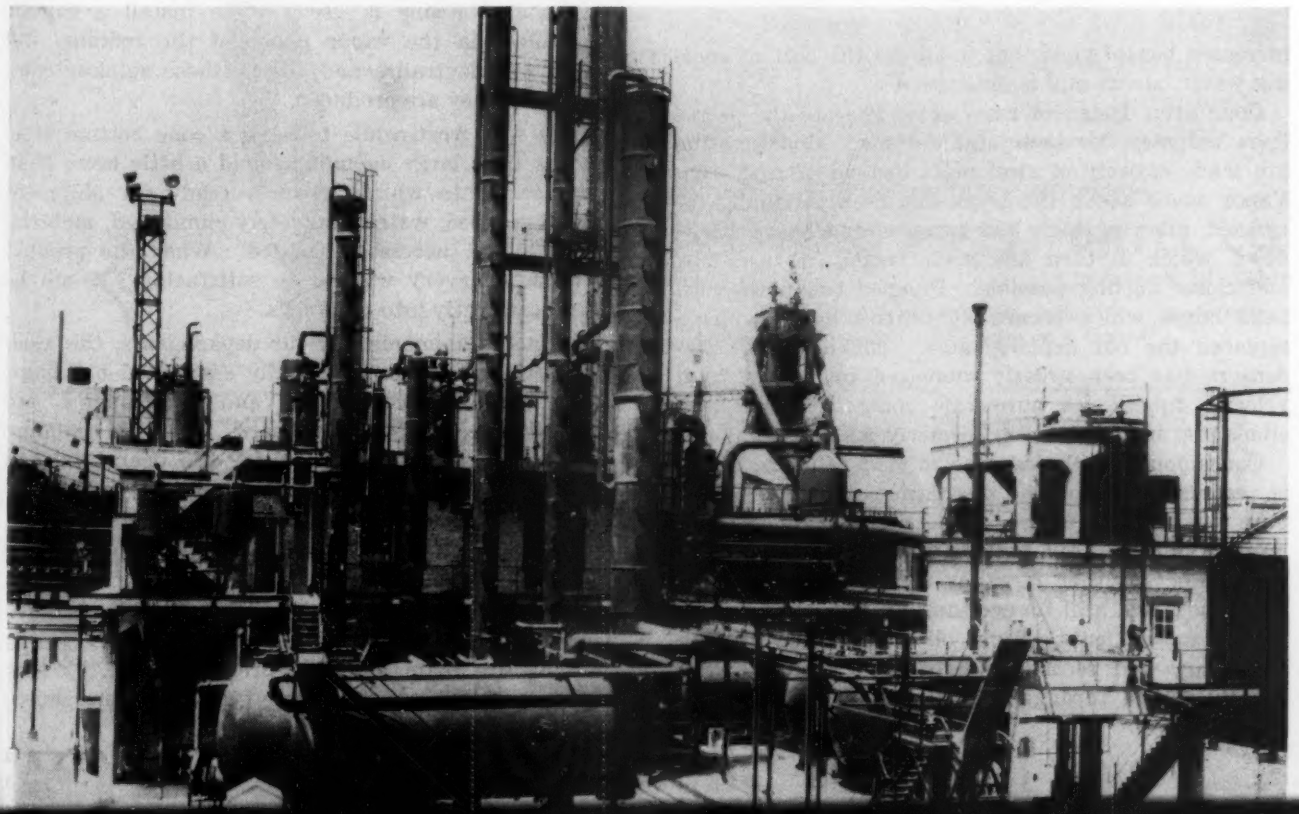
In order to increase scrubber efficiency by offering more surface on which to spread the oil and thus offer more contact to the gas, steel turnings and grids made of expanded steel sheet have been used. While more efficient scrubbing was accomplished, very serious difficulties arose due to use of steel grids. Because this packing did offer more surface, it also tended to filter out muck more readliy, and scrubbers packed with this material tended to build up gas resistance much quicker than those of the old wood hurdle type. A second and more serious trouble was caused by oxidation of the steel by excess oxygen in the gas. Immediately when iron oxide was formed, grids became gas purifiers and took up sulphur, and then corrosion progressed faster. If oxygen in the gas is kept below the critical point of 0.3% there will be little tendency to oxidize, and steel grids or turnings may be perfectly satisfactory. Leaky ovens, high top temperatures and too low back pressure, together with inadequate oil cleaning equipment, account for much of the scrubber trouble so prevalent today.

In order to prevent much of this trouble and to reduce back pressure caused by any scrubber packing, some operators are experimenting with spray type scrubbers which have no packing at all, or at least very little. There has not been enough experience with this type scrubber to determine its cost or efficiency.

Benzolized oil leaving the bottom of the first gas pass is returned to the stripping still after being preheated to approximately 120°C. High temperatures, while affording easier stripping, tend to increase sludge in the oil, while lower temperatures have a tendency to leave heavier fractions in the oil and cut down recovery. Debenzolized oil leaving the wash oil still is cooled and flows to a decanter tank. From there it is pumped back to the scrubber and the cycle repeated. Approximately 125 gallons of absorbent oil is circulated per ton of coal carbonized. Oil should be brought down to a temperature as near as possible to the temperature of gas entering the scrubber, but never lower, as this will condense water vapor in the gas and cause serious difficulties in the light oil system.

The present high cost of fuel makes both vapor to oil and oil to oil heat exchangers advisable. These lessen the load on the superheater and thus conserve steam. If absorbent oil is kept clean, maintenance on this equipment is small. Modern superheaters and heat exchangers use much smaller tubes than formerly, are more efficient and require less cleaning. Wash oil coolers normally consist of banks of galvanized pipe through which the oil is pumped, the water dripping down from a distributing trough at the top. This type cooler uses both the water's direct cooling effect and the latent heat of evaporation to bring down oil temperature. Some plants may use well water in the summertime on the last bank of coolers in order to bring down oil temperature for more effective scrubbing. Oil from the coolers flows to a collector tank where some cleaning by reduced velocity takes place. Often a small side stream of oil is continuously pumped from the collector tank's dirty section. This oil is purified either by chemical treatment or distillation, and returned to the circulating system. Clean oil in the circulating system not alone

Fig. 23—Modern continuous benzol plant



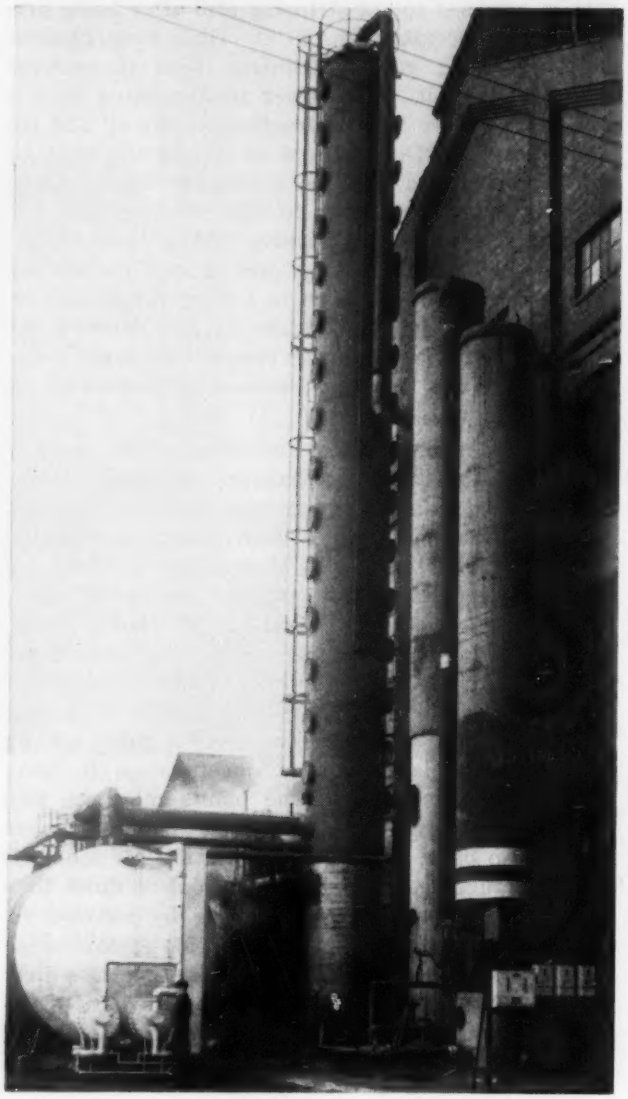


Fig. 24—A benzol-toluol-xylol batch refining still

increases benzol yield, but it lowers the cost of cooling water, steam and maintenance.

Coke oven designers have again gone to the petroleum industry for their still designs. Modern stills are made entirely of steel plate instead of cast iron. Vapor space above the trays has been gradually increased, allowing high boil-up rates and heavy backflows, which in turn has made larger forward flow and closer cutting possible. Pumped backflows with head boxes which accurately control backflow have replaced the old dephlegmator. Efficiency of condensers has been greatly increased by use of high velocity tubes, and automatic control boards have eliminated much guessing formerly necessary.

Continuous distillation even in moderate size plants is recommended for the distillation of crude benzol, pure benzol and toluol. Unless the plant is very large, xylol cuts can best be made in a batch still. All plants, whether large or small, should have at least one batch still for working up end products and making special cuts. Light oil stills should produce a primary and secondary light oil. Primary oil is usually passed through a small but efficient column which moves CS_2 and other very light fractions. Oil leaving this column is cooled and washed in a batch agitator with strong sulphuric acid. Secondary oil from the light oil still is much smaller in volume and usually redistilled in a batch still. The first cut is washed with primary light oil, and the second cut is crude heavy solvent which contains a large percentage of valuable indene and coumarone. Residue from this still is largely naphthalene, heavy solvents and wash oil. This crude still residue may be sold as such, further distilled for its naphthalene content, or chilled and most of the naphthalene extracted by crystallization.

The benzol washer or agitator where primary light oil is refined, is, in most plants, a lead-lined conical bottom tank containing a mechanical agitator and having a capacity of from 5000 to 10,000 gallons. There has been a tendency recently to substitute plain steel tanks for lead-lined tanks, as experience has shown that increased life of a lead-lined tank does not justify the added cost. If plain steel is used it should be designed so that it is readily removable with a locomotive crane. As corrosion takes place rapidly at the bottom of the cone, stainless steel or cast iron is worthwhile at this point.

Crude benzol charged to the agitator contains unsaturated hydrocarbons and other impurities which can be removed by strong sulphuric acid. Much of the acid used in washing benzol may be readily recovered for use in making ammonium sulphate. Following the acid wash, crude benzol is neutralized with caustic soda. Washed benzol is a wine colored liquid, getting its color from the resins which are dissolved in it. These resins are sulphonated hydrocarbons that often break down in subsequent distillation and give the finished benzol a bad odor of corrosive properties. To eliminate this trouble it is usually necessary to either put the washed benzol through a continuous boil-over still where direct steam at temeratures not sufficiently high to break down the sulphonated resins is used, or to install a caustic neutralizer in the vapor phase of the refining still which will neutralize and absorb these sulphur compounds as they are produced.

It is well worthwhile to have a cone bottom steel loading tank large enough to hold a little more than a carload, into which products ready for shipment can be pumped, water completely eliminated, material tested and if necessary treated. When the product is found in every way to be satisfactory, it can be dropped directly into tank cars.

As in the ammonia and tar departments, the modern benzol plant has practically eliminated buildings. Stills, agitators, condensers, and even pumps, are now insulated and put outdoors. The still building may now only be protection for the operators, and only contain instrument boards and receiving tanks. Such construction not only saves building costs, but eliminates serious hazards in benzol buildings and lowers insurance rates.

The benzol plant should be reasonably isolated from the rest of the plant. It should be protected by suitable fire foam and CO_2 fire equipment. Where buildings are necessary, deluge type sprinklers should

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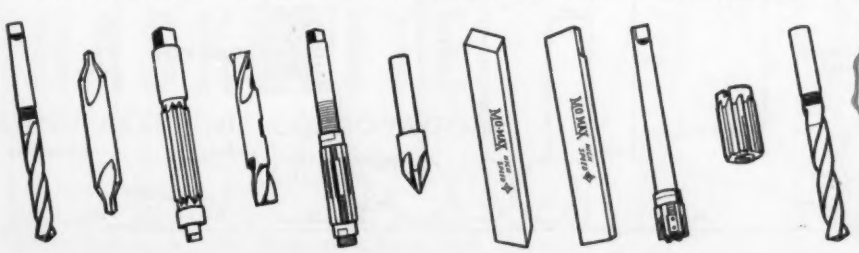


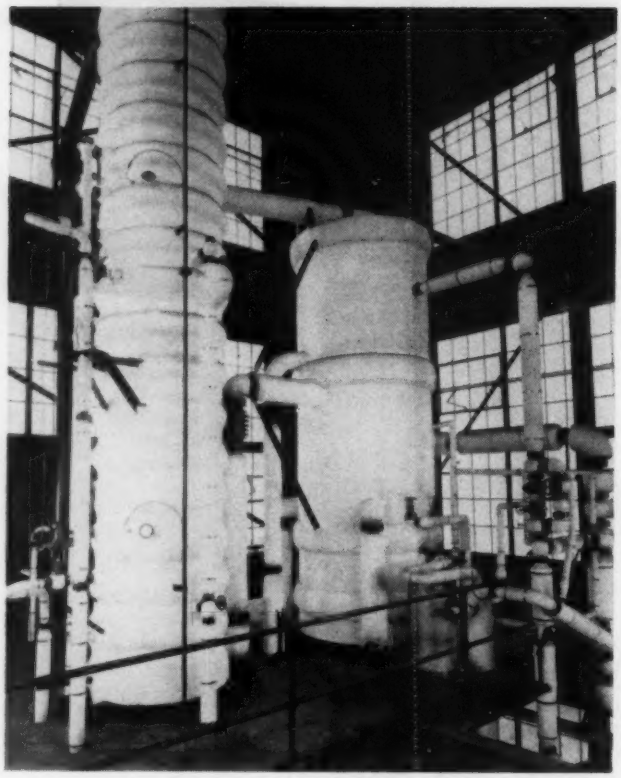


Fig. 25—Fractionating and distilling columns of a continuous tar distillation plant

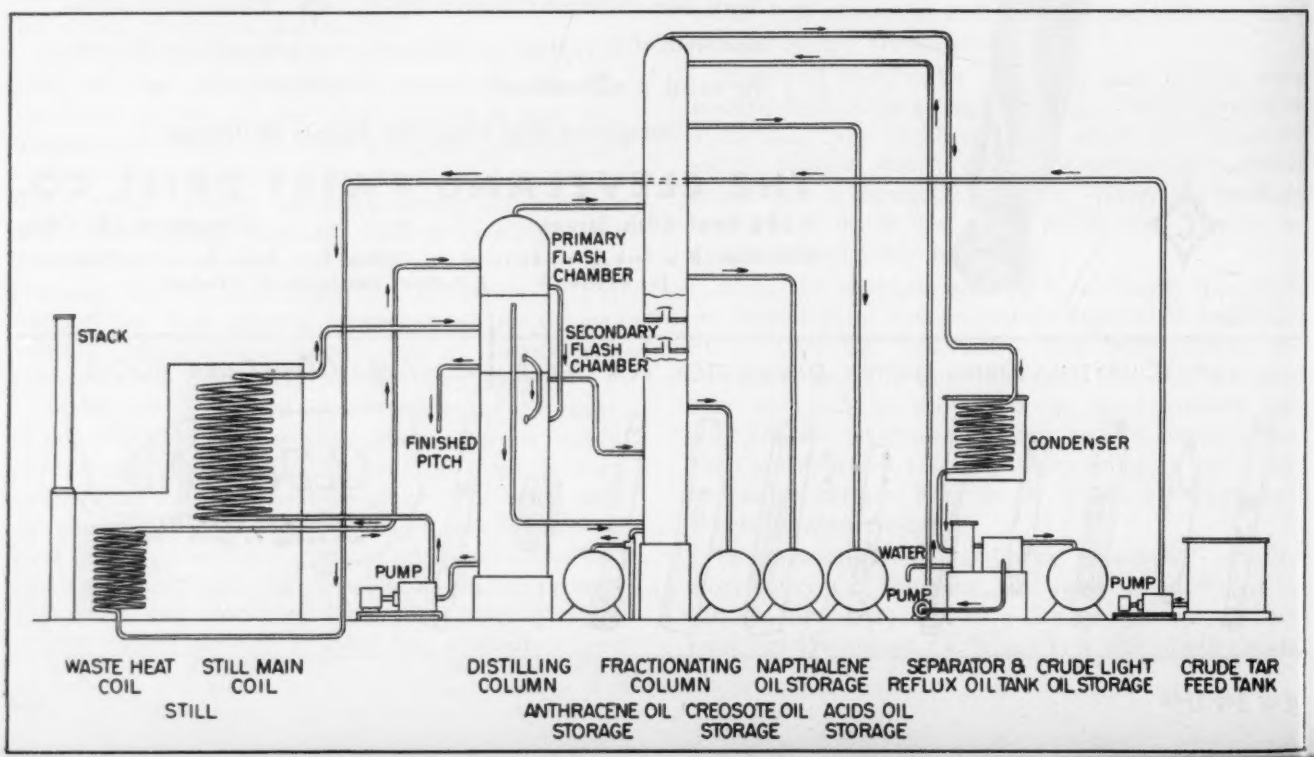
be used. Storage tanks where practical should be underground, and in all ways plants should conform to good oil refinery safety practice. Motors and electrical equipment should be vapor-proof if outdoors, and explosion-proof if indoors. Exits should open outward so that operators if caught in a fire or explosion may not be trapped within any enclosure.

Gas leaving the benzol scrubbers has now given up its ammonia, tar, naphthalene, pyridine, benzol, toluol, xylol, as well as many other chemical products contained in the gas as it leaves the coke ovens but which are not usually economical to recover. Hydrogen cyanide is sometimes recovered as sodium cyanide, and phenol may be recovered from ammonia liquor as sodium phenolate or as crude phenol. Where these last two products are recovered it is done to prevent extreme pollution rather than because it is profitable. Two general methods used for phenol recovery from ammonia liquor are either by scrubbing with benzol and extracting phenol from the benzol, or by absorption in caustic soda in the vapor phase of the ammonia still. There are many plants of both types that have been in production for years.

Sulphur, principally in the form of hydrogen sulphide (H_2S) still remains in the gas, usually in volumes ranging from 200 to 500 grains per 100 cubic feet of gas. If gas is to be sold for commercial distribution, this sulphur must be almost completely eliminated. Even for many steel plant uses, sulphur must be materially reduced. Several liquid gas purifiers have been developed which will reduce the sulphur in gas to well below 50 grains. Some of these processes recover sulphur as a commercial product. However, for complete elimination of sulphur, an iron oxide purifying box, used by the gas industry for over 100 years, is still necessary, either for complete purification, or in conjunction with a liquid purifier. Necessity of using high sulphur coals for cokemaking, and the probable improvement in liquid type sulphur recovery systems, should some day add sulphur to the long list of chemicals that help the coke producer offset cokemaking costs.

Carbonization of coal, with chemical recovery and chemical synthesis, is just beginning to realize its importance. It can add much more than it does today to the steel industry's income and eventually may develop into an industry of its own rivaling the steel industry in magnitude.

Fig. 26—Diagram showing continuous tar distillation process



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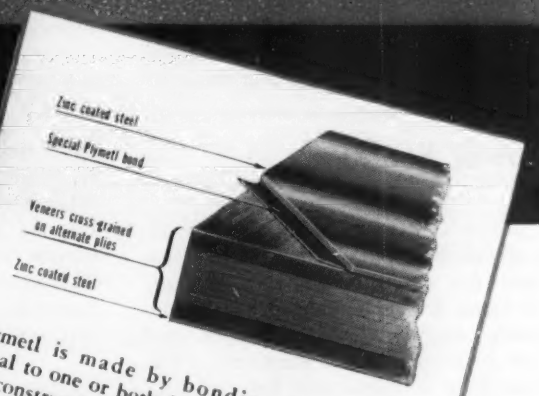
Weight in lbs. per sq. ft.	1.01	1.17	1.43	1.5	2.5	4.37	1.44	1.81	2.28
Stiffness factor E I in. ² lbs.	4,900	8,400	13,200	124	575	3,050	872	1,760	3,500

	PLYMETL EVE			STEEL U.S. STD. GAUGES			ALUMINUM B & S STD. GAUGES		
	1/4"	5/16"	3/8"	20 ga.	16 ga.	12 ga.	10 ga.	8 ga.	6 ga.
Weight in lbs. per sq. ft.	2.25	2.40	2.56	1.5	2.5	4.37	1.44	1.81	2.28
Stiffness factor E I in. ² lbs.	17,000	28,000	43,000	124	575	3,050	872	1,760	3,500

In the chart above, note that a 5/16" EVE Plymetl panel (zinc-coated steel two sides) weighs 2.40 lbs. per square foot. This is less than the weight of 16-gauge steel. However, the resistance to bending of the Plymetl panel is about 50 times as great!

Where rigidity is of prime importance, consider the following: A 3/8" UVU Plymetl panel (aluminum two sides) weighs 1.43 lbs. per square foot. The weight of 20-gauge steel is 1.5 lbs. per square foot. The Plymetl panel, though lighter in weight has 100 times the stiffness of the sheet steel.

In computing the values of Plymetl, the following is assumed: (1) The modulus of elasticity of steel, 30,000,000 lbs. per sq. in. (2) The modulus of elasticity of aluminum, 10,000,000 lbs. per sq. in. (3) The modulus of elasticity for the core material, 1,300,000 lbs. per sq. in. along the grain. 65,000 lbs. per sq. in. across the grain. (4) The thickness of steel and aluminum, .021" (27 ga.) and .015", respectively. (5) The weight of plywood plaque, 30 lbs. per cu. ft.



Plymetl is made by bonding thin sheets of metal to one or both faces of a plywood plaque. Its construction effects the most efficient distribution of these materials, combining high strength qualities of the metal surfaces with low density of woods. Result: Plymetl makes an ideal structural material, simulating an I beam with the metal surfaces taking the part of the flanges and the light weight plaque acting as the web.

Write for complete data and samples.

HASKELITE

MANUFACTURING CORPORATION

Dept. S, Grand Rapids 2, Mich.

New York Chicago Detroit
St. Louis Philadelphia Los Angeles
Canada: Railway & Power Engineering Corp., Ltd.

Rubber to Metal

(*Concluded from Page* 85)

A prime advantage of rubber in these applications is its ability to operate without damage even though the water may contain considerable grit or other abrasive material.

Abrasion resistance, combined with elasticity, makes rubber particularly well suited to many types of masking and sealing. Masks and shields for the surface control of sandblasting, painting and chemical processing are widely used. They can be designed to snap in place and thus fit tightly and accurately without injuring the part, yet they are readily removed and reused. A manufacturer of refrigerating equipment had a problem to design a quick, effective seal on the device for pressure testing his refrigerator coils. A soft bonded-rubber part, molded to fit the element to be tested, completely solved the problem and could be reused many, many times. Bonded-rubber seals for bearings and similar parts retain lubricant and exclude harmful dust and dirt. A unique and effective use of a rubber shield permits the passage of bar stock through a machine chuck or collet yet prevents the entry of chips and coolant and eliminates galling of the jaws or work. Valve seats and stems embodying bonded-rubber faces provide positive sealing, quiet operation, and the ability to function in the presence of grit or other impurities in the fluid being controlled.

Flexible Seal—In another case requiring a flexible seal, a machine tool manufacturer had a requirement to operate a series of microswitches by means of cams operating in an oil spray within a gear box. To keep the switches dry, the chips and other contamination from entering the gear case, and to retain the oil within the case was the problem. The solution was simple with rubber. A hole was punched in the gear case cover at each switch position. Synthetic rubber diaphragms were bonded in each hole with a small metal button bonded to the center of each. The cams then contact the inside of each button and the respective switch arms contact the outside. In addition, a sealing gasket of rubber was bonded around the edge of the cover at the same time.

Still another line of application for rubber results from its fluid-like behavior and incompressibility. This property has established rubber in the field of sheet metal forming. Frequently, a single die may be used, and the sheet metal pressed between this and a large block of comparatively soft rubber. The automotive industry has been a pioneer in this type of die work. The large radii and shallow draw work required in forming automobile body panels is ideally suited to use of this method. The fluid pressure of the rubber develops forces that cause the sheet to assume the contour of the die block. Less die sinking and maintenance, smoother parts, and fewer lubrication troubles are some of advantages which result from this method. This same principle has long been employed in the use of rubber hammers for automobile body and fender repair. Rubber spring plates and strippers for punch and die work are also becoming widely used.

Many other uses for rubber in production equipment have already become commonplace. Rubber hose is employed to conduct gases, fluids and even pulverized material. Foam rubber is used to cushion shoes, seats and safety helmets. Rubber tanks, cans and dippers may be used in the handling of many corrosive elements. Such containers are almost indestructible and can be deformed to crack-off any accumulation of solid material which may form. Of course, one of the oldest uses of rubber is as electrical insulation in many shapes and forms.

Fabrication — From the foregoing examples, it should be seen that rubber may be compounded to provide a wide range of elasticity, stiffness, resilience, abrasion-resistance, oil-resistance, elongation, tensile strength, permeability, tear-resistance, chemical stability, dielectric strength, and other properties. It may be fabricated by molding, extruding, dipping, or cutting. Parts may be bonded or vulcanized directly to a variety of materials, or may be snapped in place by stretching or clamped, or cemented to adjacent elements. The molding process permits formation of complicated shapes of almost unlimited variety. While it is hoped that design engineers will learn to recognize the many possible advantages to be gained through the application of rubber, selection of the exact rubber compound and specific design of the required part are usually best left to the discretion of men experienced in this line.

Only a few of the many possible manufacturing applications for molded and bonded-rubber parts have been outlined here. Yet, it is apparent that the peculiar characteristics of rubber are making it an important production tool, capable of performing many jobs. Although results to date have been little short of phenomenal, machine tool, accessory and equipment manufacturers are just beginning to recognize and investigate possibilities of this material.

Power Source

(*Concluded from Page* 81)

When analyzing steel samples with high alloy content, spark lines are used for calibration, using low inductance and high capacitance in the power source. High inductance and low capacitance are employed when analyzing samples with intermediate alloy concentrations. With very low alloy concentration, arc lines are used for calibration, operating the arc source from the 220 v line with all available inductance in the initiating spark circuit.

During extensive work with the new source since its installation, many source parameters have been tested and the results recorded. Most of the work in this laboratory is with steel, and the source parameters listed below have been found to be those that give the best burn (no craters) and provide readily reproducible and accurate results:

Capacitance	0.010 microfarads
Inductance	¾ turn*
Primary Resistance	7 ohms** + 11½ ohms***
Current	19 amperes
Pre-spark Interval	15 seconds
Exposure	10 seconds
Oscillograph Reading	3 (3 breaks per ½ cycle)
Peak voltage	18,000 volts
Air pressure	2.5 pounds per sq. in.
Auxiliary Gap (Air Gap)	6 mm (approximately)
Analytical	4 mm

* Approximately 10 microhenries
** Adjusted variable resistance
*** Permanently mounted resistance

Stainless Rods

(*Continued from Page* 101)

compared with looping mills, higher speed can be utilized, the temperature is maintained at a higher value (resulting in lower power costs) less space is required and labor cost is lower.

Flexibility of output requires that individual adjustment of the speed of each stand or of small groups of stands be possible so that percentage reductions can be varied to suit different overall elongations. It is therefore necessary to drive each stand or group of stands by a direct-current adjustable-speed motor.

The finishing mill at the Rustless Iron & Steel Div., Armco Steel Corp., Baltimore, consists of five stands in

tandem spaced on 6-foot centers and individually driven by adjustable-speed direct-current motors. Only one strand is rolled, but a product of uniform cross section is required.

Stands No. 1, 3 and 5 are horizontal and driven by direct-connected motors through pinion stands. Stands No. 2 and 4 are vertical and each is driven by two vertical motors—one driving each roll direct. One motor is located above the roll and drives downward and the other is located below and drives upward. All motors are force ventilated.

Budgeting Blooming Mill Maintenance, by J. Harry Mayer, assistant superintendent, Blooming Mill Department, Jones & Laughlin Steel Corp., Pittsburgh: Budgeted blooming mill maintenance is not a fantastic idea but one based on a need for more accurate control of our cost under present operating conditions.

Good budgeting of materials must be made from sound records and a physical inventory, recorded piece by piece, must be kept of all spare equipment. Recording can be made by use of a card file system and must readily make available all necessary information, such as name of piece; particular unit on which it is used; particular section of each unit the piece fits to or with; specifications, weight, cost, etc.

Probably the greatest difficulty in setting a maintenance budget is to determine an allowance for unusual expenses and contingencies. No one can anticipate in advance what particular failures might be encountered in any given year, let alone set a dollar figure as to their yearly cost. However, a careful analysis of past expenditures and a record of the various past breakdowns is a good start toward setting a reasonable allowance for such costs. Furthermore, periodic review of performances, such as every quarter, give ample opportunity to review and revise whenever necessary.

New Power for Sparrows Point, by J. M. Spencer, assistant fuel engineer, Bethlehem Steel Co., Sparrows Point, Md.; It has been realized for a number of years that utilization of by-product fuels at the Sparrows Point plant of Bethlehem Steel Co. lets much to be desired. Several plans were advanced to correct this condition, but they did materialize. After the war the problem was again examined, and studies indicated that the fuel available and the plant electrical load made an electrical generating station economically attractive. As a result there has been built and put into operation a station which is presently generating approximately 75 megawatts output.

Principal equipment consists of two 400,000 lbs/hour boilers and two ASME standard 33,000 kw hydrogen-cooled generators. Steam conditions at the turbine throttle are 850 psi and 900° F T.T. The boilers are fired with blast furnace gas, coke breeze and oil.

Certain changes made during the design period are of interest. It was originally planned that the boilers would have a capacity of 325,000 lbs /hour but when the contract was let it was found that certain minor changes could be made to give additional capacity.

Drum and superheater safety valves were increased in size to meet the additional steam flow. Feed connections were increased from 5 to 6 inches and forced draft fan and boiler feed pump capacity were upped by use of larger impellers.

As a result of these modifications it has been possible to operate these units at continuous ratings of 450,000 lbs/hour with a maximum turbine throttle flow of slightly above 320,000 lbs/hour.

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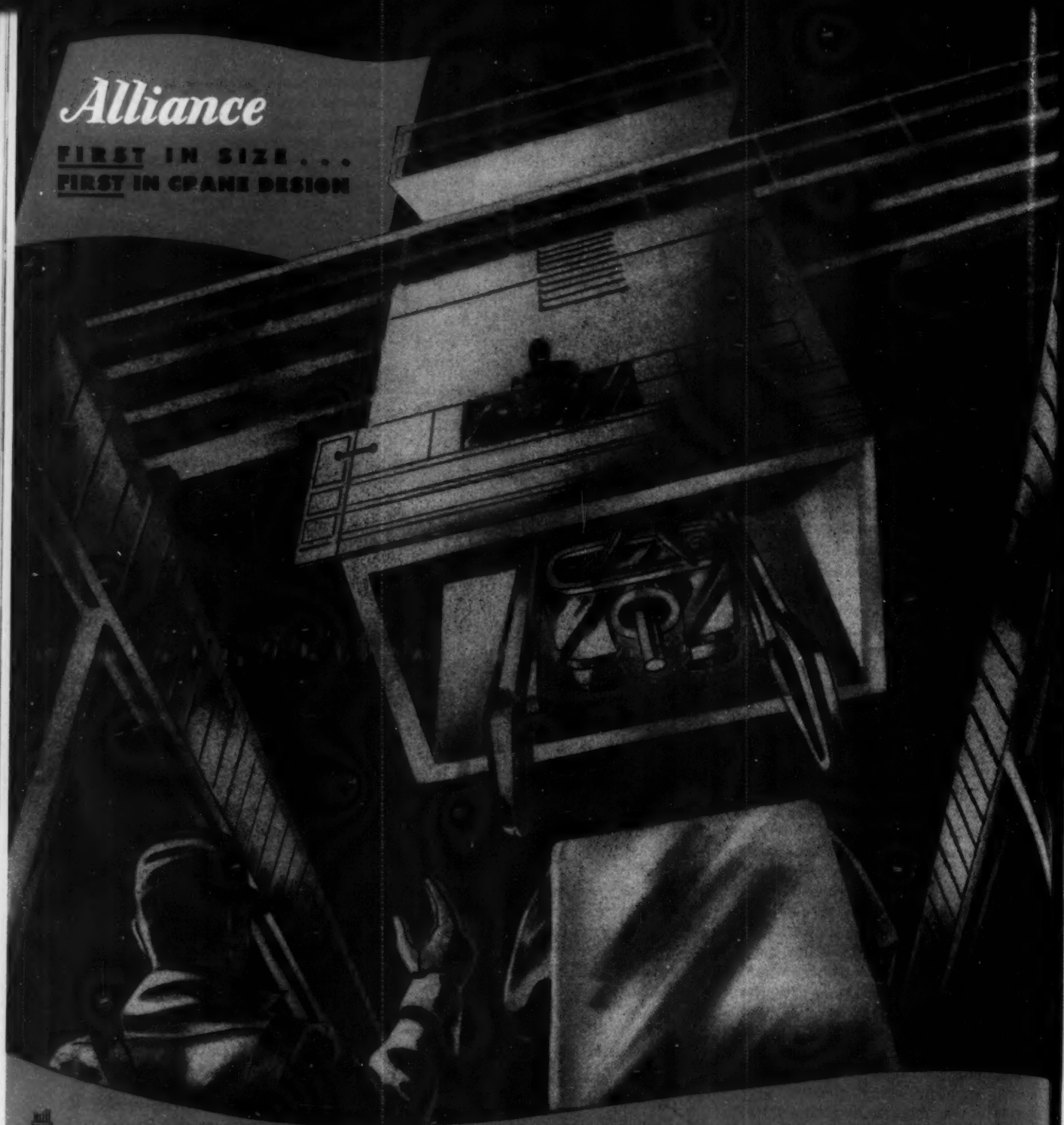

Shown here is a 250-ton push-pull, screw-type Stripper crane, used for stripping both small end-up ingots, and large end-up ingots with hot tops. An added feature for faster handling is the retractable bull nose; with this, no adjustments are necessary when stripping ingots of various types and sizes. Alliance builds this Stripper crane in various capacities up to 800 tons, with a safety factor of 5. If your installation does not warrant a stripper of this kind, ask us about our impact stripper, which makes use of the most reliable of all forces, gravity. The Alliance Machine Company builds all types—all sizes—to move heavy loads safely, quickly, economically. Always rely on Alliance to give your plant dependable, extra lifting power.

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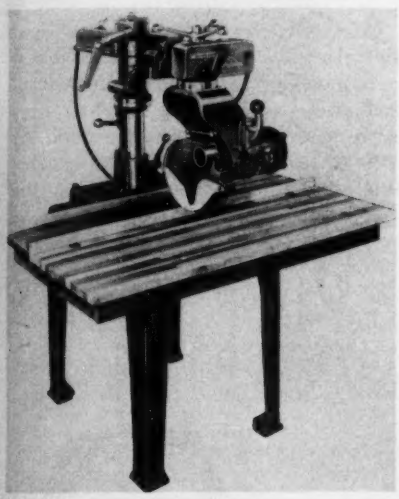
New Products and Equipment

Radial Saw

A Centr-Pivot offset yoke which permits all cuts to be made in the convenient table area is a feature of the 900 series radial saw produced by Walker-Turner Division, Kearney & Trecker Corp., Plainfield, N. J. Wood, plastic and similar materials up to 3⅛ inches thick may be cut



with the saw's 9-inch blade. The geared motor has 2½ times overload capacity and is cool running.

Cross cut travel of the saw is 24 inches, making it possible to rip to the center of a 48-inch panel. The holding design incorporates taper latch indexing and locks that are easy to operate and reach. The laminated hard maple table measures 24 x 46 inches. Single and three-phase models with 1½ hp motors are available.

Check No. 1 on Reply Card for more Details

Lift Truck

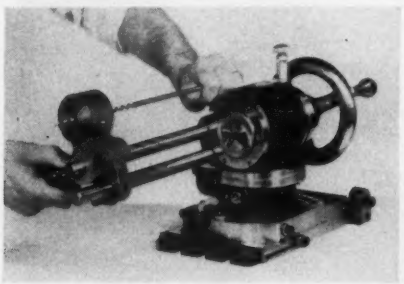
Crated or uncrated materials and products of the heavy or bulky nature may be handled with the Rol-A-Lift truck announced by Skarnes Engineering & Supply Inc., 2428 Riverside Ave., Minneapolis 6, Minn. One of the two models manufactured, the M-2, has a 2000-pound capacity and is suited for moving long bulky items. It has adjustable forks to accommodate crates of varying width and operates with a mechanical cam lift.

Model M-8 has an 8000-pound capacity and is suitable for moving heavy production machinery, such as presses, cutters and lathes as well as bulky crated products, palleted units or similar material. Units are used in pairs and moved about like hand trucks. To load a crate, one unit is placed at each end with forks inserted underneath and then each unit is jacked up, lifting the crate and putting it on wheels, ready to roll.

Check No. 2 on Reply Card for more Details

Relieving Attachment

Radial relief grinding of long tools not equipped with centers is possible with the D-S grinding fixture made by Royal Oak Tool and Machine Co., 621 E. 4th St., Royal Oak, Mich. The accessory mounts on the bars



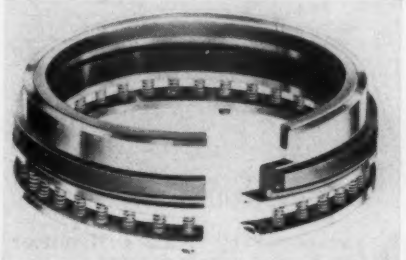
provided as a standard part of the fixture. It holds the tool close to the end for grinding support and a clamp is also provided to give added rigidity.

Accessory swivels on the top bar so that tools with large shanks can be inserted from the back and so that there is no need of moving the fixture from set position when the same form is being ground on more than one tool. Standard drill bushings and liners can be inserted for any size tool up to 1⅜ inches in diameter.

Check No. 3 on Reply Card for more Details

Roll Neck Seal

Sealing in the vertical plane and maintaining a positive drive at all times, the John Crane roll neck seal, developed by Crane Packing Co., 1800 Cuyler Ave., Chicago 13, Ill., is a self-contained unit, flexible en-



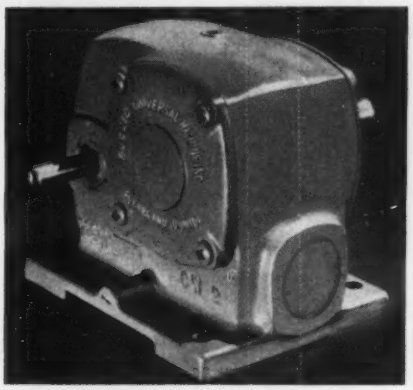
ough to take care of neck deflection. Multiple spring arrangement provides for endwise movement of the roll so that the seal does not have to take the mill thrust load.

Advantages of the the seal include: Increased bearing life with savings of oil and grease, ease of assembly, compensation for shock, end play and neck deflection, elimination of wear and scuffing on neck or sleeve and lapped sealing faces which keep water out and lubricant in. Seal is manufactured in sizes from 3 to 36 inches. Illustrated is a seal for a 22½-inch roll neck.

Check No. 4 on Reply Card for more Details

Speed Reducer

Euclid Universal Machine Inc., 15002 Woodworth Rd., Cleveland 10, Ohio, is manufacturing the CW-2 double reduction, horizontal type speed reducer. Capacity of the unit is ½ output horsepower with 1,000



inch pounds output torque, depending upon the ratio. Ratio range is from 10 to 1 to 3840 to 1. Overall dimensions are 8½ inches long, 7 inches wide and 7½ inches high. Input shaft diameter is ⅝-inch and output shaft diameter is 1 inch. Other features include aluminum alloy housing, phosphor bronze worm gears, 20 degree pressure angle gearing, ground thread worms and Timken roller bearings.

Check No. 5 on Reply Card for more Details

Barrier Gate Guard

An electronically controlled automatic safety and barrier gate guard, developed by Hoffman Engineering Corp., Anoka, Minnesota, is designed to prevent physical injury to power press operators. Electronic control is accomplished by a light screen between the operator and the press die sets. If light screen is broken or obstructed, the press is rendered inoperative.

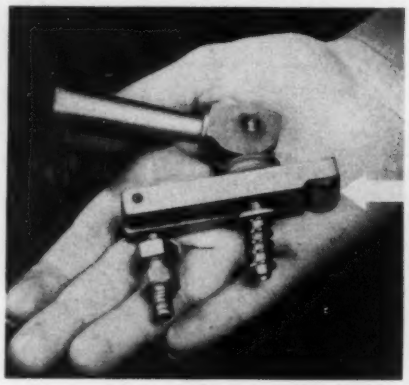
Barrier gate guard normally stays

in the up position but descends to block completely the entrance of the operator's hands to the die sets or danger area if an attempt is made to beat the ram after tripping the press. There is no mechanical moving part in front of the operator to mar the view of the die sets.

Check No. 6 on Reply Card for more Details

Midget Clamps

Available either with a soft alloy bronze or a hard chromed heat treated steel toe are the series No. 250 midget clamps, offered with three different clamping arrangements by Noble & Stanton Inc., 1000 Broadway, Bedford, O. Soft toe clamps (arrow) grip polished surfaces without marring while secondary machining operations are being performed. Use



may be as component parts in assembly operations as well as in drilling, milling, tapping, etc.

Model CHAC-250 is a heel cam clamping assembly, model CCCA-250 a center cam clamping assembly, while model HCA-250 is a hand knob clamping assembly. All units provide for maximum job clearance and finger tip operation. With the exception of the alloy bronze toe, all parts of the clamps are heat treated and hard chromed.

Check No. 7 on Reply Card for more Details

Rotary Files

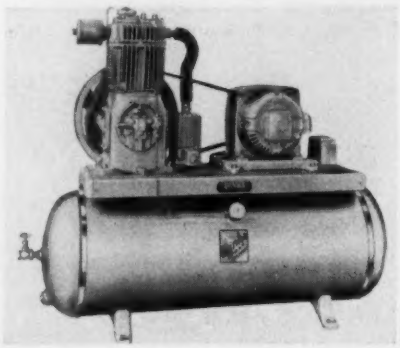
Powermax TanTung rotary files, available from Ferriot Bros. Inc., 2685 Mogadore Rd., Akron 5, O., in 36 shapes and various sizes, are furnished with standard 30-degree right hand spiral, radial cut teeth and medium pitch. Spiral angles other than 30 degrees, either right or left hand, are obtainable in most shapes. Shanks, standard size of which is ¼-inch, may be replaced. Files themselves may be resharpened by the company.

Files contain tantalum-columbium carbide, a material that imparts a self-lubricating action, minimizing effects of friction and chip wear. Most effective operating speed range is 5000 to 15,000 rpm. For fine or delicate work, operation may be at lower speeds.

Check No. 8 on Reply Card for more Details

Air Compressors

Two-stage air compressors in six new models are being offered by Binks Mfg. Co., 3114 Carroll Ave., Chicago 12, Ill. All are designed to supply air for spray painting as well as at higher pressures than those



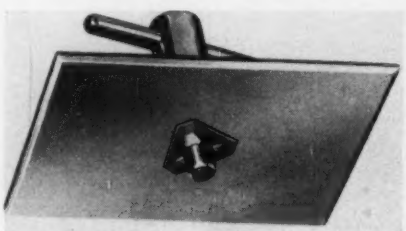
normally used for spray finishing, this allowing the compressor to serve as a source of air for various purposes. Compressors are built for 200 pound working pressure.

Displacement of the new models range from 7.13 to 40 cfm. Power is furnished by motors ranging from 1½ to 10 hp. A loadless starting mechanism completely unloads the compressor until the motor has attained its full-load speed. The 1750 rpm motors used on the 2 hp and larger units are equipped with overload protection starter switches.

Check No. 9 on Reply Card for more Details

Self-Locking Fastener

Useful in developing tight assemblies free from end-play on relatively soft shafts such as cold rolled steel, castings and plastic materials, is the self-locking Truarc triangular retain-



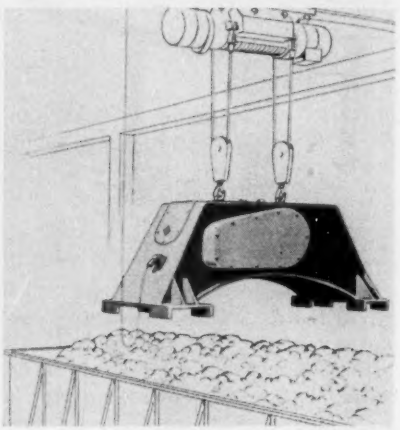
er, announced by Waldes Kohinoor Inc., Long Island City 1, N. Y. The type 5305 retainer requires no groove or special tools for assembly and disassembly. It is made with a flat or spherical cross-section and has three equally spaced projecting prongs.

When slipped over a shaft, it can be quickly and easily positioned in the direction of installation. At the same time, the three prongs tend to lock securely around the shaft when the slightest pressure is applied from the opposite direction. Retainers are offered in sizes for shaft diameters ranging from 0.090 to 0.375-inch. Other sizes are to be added.

Check No. 10 on Reply Card for more Details

Car Shaker

Coal, cinders or slag, coke, sand and gravel and other granular materials may be quickly and safely emptied from drop-bottom gondola cars by a new car shaker announced by Allis-Chalmers Mfg. Co., Milwaukee, Wis. Weighing about 5 tons the



shaker is designed to fit all sizes of gondola cars manufactured in the United States. It has an all-welded 11 x 5 x 4-foot 4-inch steel body which is lowered to rest on the car body flanges by a hoist or crane.

Vibratory motion is transmitted to the car through an eccentric shaft mounted within the shaker body on heavy-duty bearings. Unit is driven by a totally-enclosed, high-torque, rubber-mounted motor located inside the shaker body. An enclosed Texrope drive with deep groove sheaves is used for power transmission.

Check No. 11 on Reply Card for more Details

Arc, Spot Welders

Dual Weld combination spot and arc welder is one of three new welders announced by Delta Manufacturing Division, Rockwell Mfg. Co., 600 East Vienna Ave., Milwaukee 1, Wis. This 14 x 19¾ x 26⅝-inch unit spot welds, arc welds, solders and brazes. Its 10-inch throat depth permits welding to the center of a 20-inch sheet. A hand lever permits quick changeover from arc to spot welding. One-piece

welding horns are of solid, high-conductivity, high-strength copper alloy castings.

Second new unit is a 5 kva spot welder which delivers a maximum of 7000 amp and operates on 230 v single phase 50/60 cycle alternating current. It will weld at a production rate of 2 pieces of 16-gage clean mild steel. Operating on a reduced voltage

of 115 v the welder's output reduces sufficiently to make possible welding of extremely fine wires without overheating or burning.

Third new unit is a portable arc welder, rated at 120 amp at 25 load volts. It is a light duty limited-input transformer type welder. Its rapid voltage recovery provides a steady arc and the current has an infinite adjustment between 30 and 120 amp.

Check No. 12 on Reply Card for more Details

Heat Exchanger

Elimination of scaling and corrosion in water passages, lengthening of electrode life by proper cooling and reduction in maintenance and down-time are claimed for a heat exchanger developed for resistance welding installation by Carlso'n Inc., P.O. Box 846, Warren, O. Also usable for cooling of power tubes in induction heat and radio frequency units, the mark I, model I exchanger is said to save from 50 to 80 per cent of the tap water used in resistance welding applications. Unit incorporates a closed system of finned copper tubes which provide a heat transfer area of 15.04 sq ft for each 24 inches of tube length.

Distilled water is circulated in the closed system by a centrifugal pump that is driven by a 1 hp motor. Using only 0.1 gallons of tap water per minute per kilowatt, the unit will dissipate heat to the valve of 25 kw. In welding applications, a thermal

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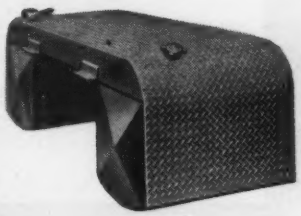

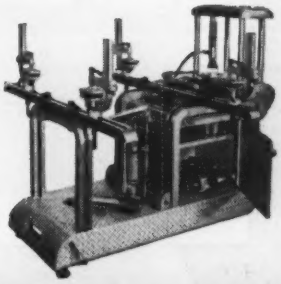

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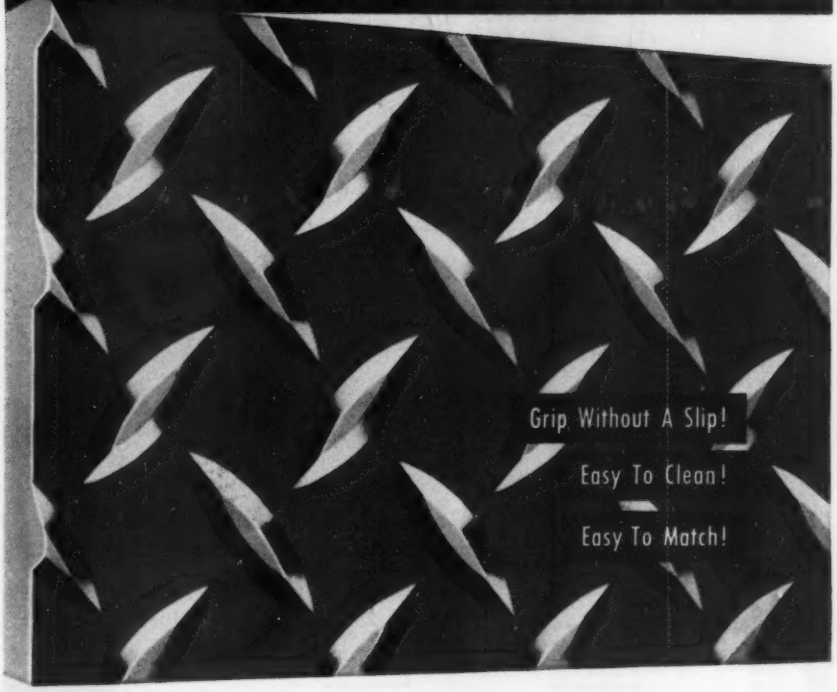

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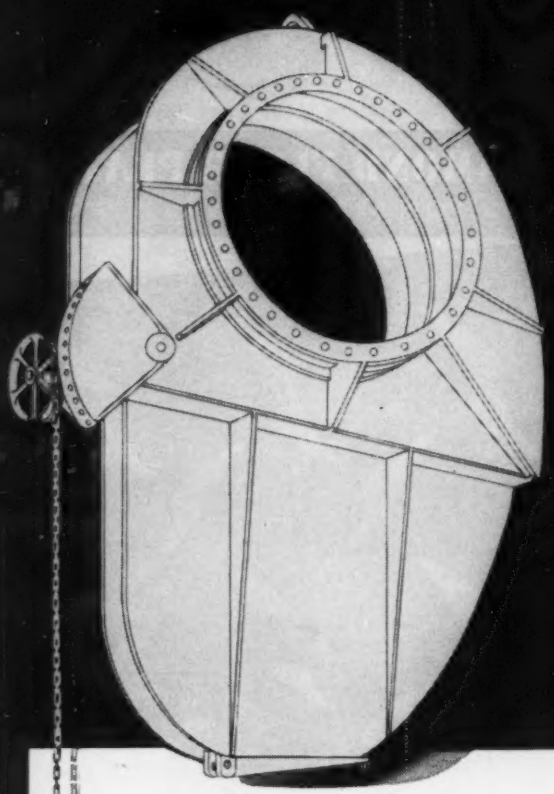

* Positive action and positive seat are things you can be sure about when you specify BROSIUS Goggle Valves for your gas mains. And even if you only close it once a year, you can be positive that a BROSIUS valve will operate—smoothly, swiftly. BROSIUS new advanced design provides constant pressure on the valve seat open or closed, and a totally enclosed valve housing to prevent leaks to the atmosphere. Remember, the mark of BROSIUS stands for sensible blast furnace and steel mill engineering. Write to us.

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SHARPSBURG • PITTSBURGH 15, PA.

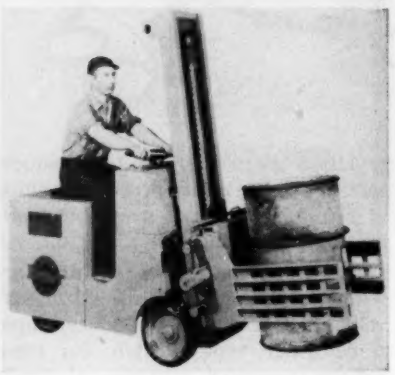
switch, located at the hottest point in the cooling system, controls the tap water flow by means of a solenoid valve. Units from 12 to 40 kw are available.

Check No. 13 on Reply Card for more Details

Clamp Truck

Lifting and transporting of such bulky items as oil drums, barrels, wood boxes, etc., are performed with the clamp truck announced by Baker Industrial Truck Division, Baker-Raulang Co., 1250 W. 80th St., Cleveland 2, O. Clamp is of all-welded steel construction with dual double-acting hydraulic cylinders. It is mounted on the truck lift carriage with control valve mounted in operator's compartment. Hydraulic system of the truck supplies the necessary oil under pressure.

Clamps can be mounted on Baker type FRH or type FAH trucks. The



weight of the clamp and the fact that the load is 5 inches farther away from the drive wheels both reduce the capacity of the truck. Either standard arms, which are straight, or arms which toe-in 1 inch at the outer ends are available. Rubber insert blocks may be attached to the arm faces to permit carrying fragile items or to minimize slipping when handling the metallic items. A special 3-arm clamp is available for carrying two barrels side-by-side in a vertical position.

Check No. 14 on Reply Card for more Details

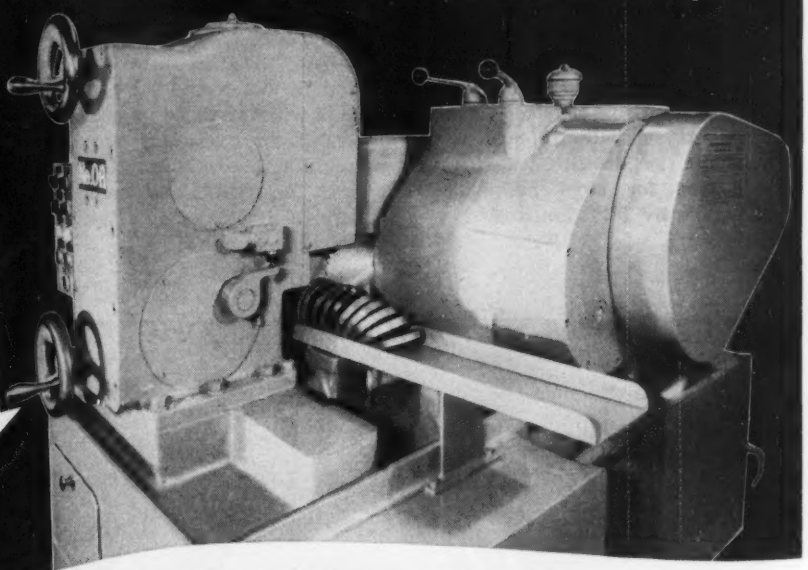
Motor, Motor Blowers

Six new types of electric motors and four high-output small motor blowers are announced by Redmond Co. Inc., Owosso, Mich. The type CU, CL, BW, BT, BL, and J micromotors are rated at 1/10, 1/12, 1/20, 1/30, 1/40 and 1/10 hp with speeds of 1550, 1550, 1000, 3000, 3000, rpm respectively, with no speed rating announced for the latter type. All are provided with two or three mounting studs or a resiliently mounted base.

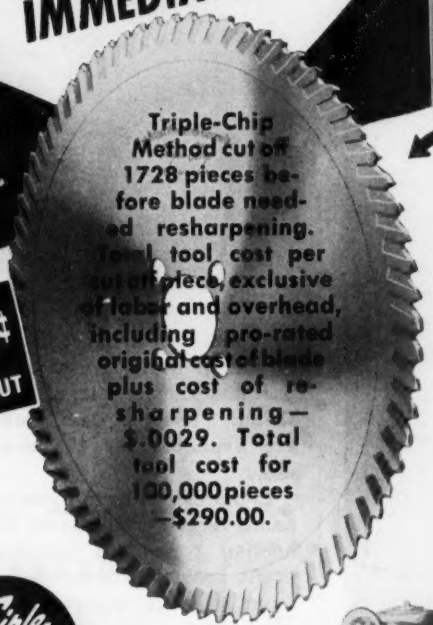
Blower models 3901, 3866, 3802,

Reduce Cut-Off Costs Now!

and INCREASE Production



Use the MOTCH & MERRYWEATHER TRIPLE-CHIP METHOD and START SAVING IMMEDIATELY!


Triple-Chip Method cut off 1728 pieces before blade needed resharpening. Total tool cost per cut off piece, exclusive of labor and overhead, including pro-rated original cost of blade plus cost of resharpening—$.0029. Total tool cost for 100,000 pieces—$290.00.

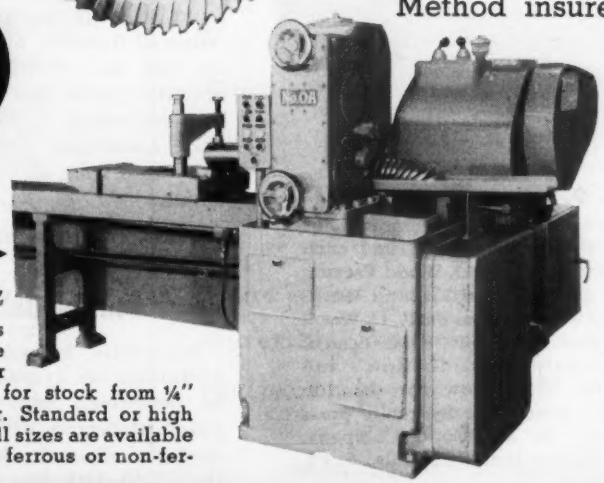
3/10¢ PER CUT

Triple-Chip vs. Alternate Method
(SAWING SAE 1020, 3¼" O. D.)

1 3/4¢ PER CUT

Alternate method cut off 260 pieces for cost of blade. Blade "done for"; no resharpening possible. Total tool cost per cut off piece, exclusive of labor and overhead—$.0174. Total tool cost per 100,000 pieces—$1740.00.

Triple-Chip METHOD



The Model O-A, with capacity to 4" round or square, is one of a complete range of circular sawing machines for stock from ¼" to 16½" diameter. Standard or high speed models of all sizes are available for sawing either ferrous or non-ferrous metals.

Faster feeds and speeds are one answer to increasing production and decreasing costs. Lower tool costs are equally important. Use of the Triple-Chip Method insures that the cut off ends shall be square, clean with milled finish, and accurate to length, eliminating facing or squaring operations. In addition, the narrow kerf of the Triple-Chip blade reduces stock waste to a minimum. Take advantage of the Motch & Merryweather Triple-Chip Method. It increases production . . . lowers tool costs . . . saves time and material.

Write us for complete information.

THE MOTCH & MERRYWEATHER MACHINERY CO.
PENTON BUILDING • CLEVELAND 13, OHIO

AT YOUR COMMAND • AN UNPARALLELED EXPERIENCE IN CIRCULAR SAWING

and BL-13 have outputs of 220, 150, 100 and 80 cfm, respectively. All but the first named are single outlet blowers. Model 3901 is a double outlet blower. Inlet screens and strong outlet flanges can be supplied.

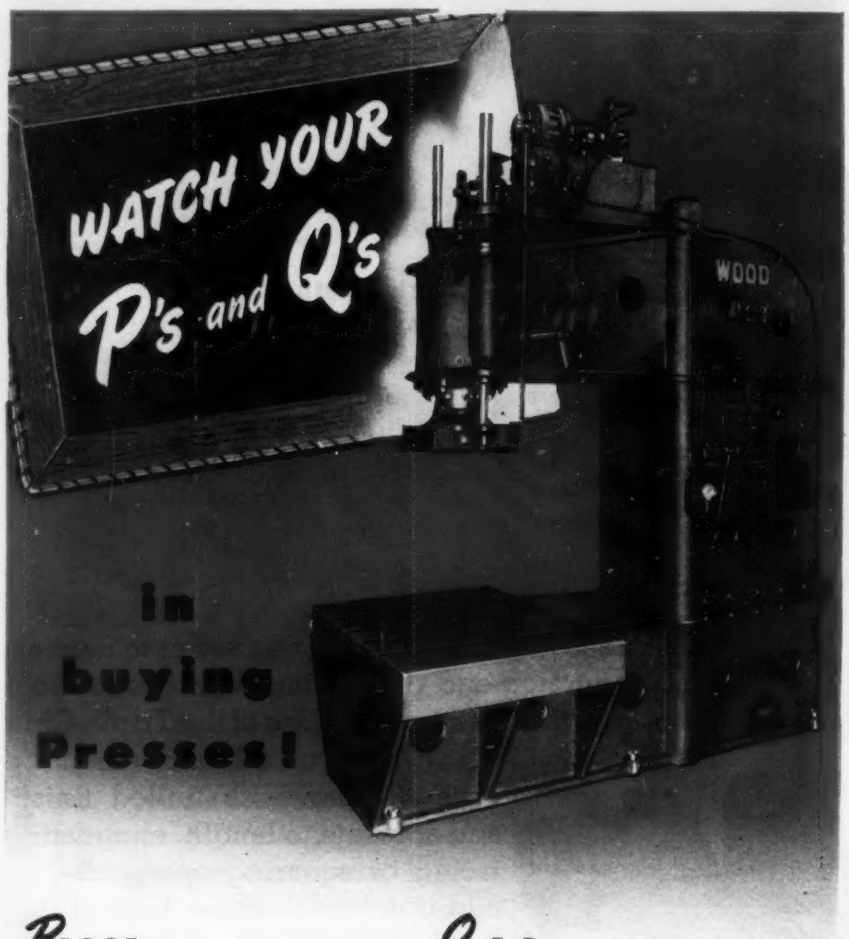
Check No. 15 on Reply Card for more Details

Magnetic Sweeper

Fifty per cent more magnetic power and better handling features are claimed for the Multilift rotary magnetool used for steel pickup purposes, made by Multifinish Mfg. Co., 2114 Monroe, Detroit, Mich. The rotating magnetic tube is propelled manually in carpet sweeper fashion to pick up steel scrap or parts. Its uses include the removal of tramp iron from liquids, powders and the like, and separating steel from other materials.

Unit may be attached to trucks and is water and oilproof and operates without wires or electricity. An acid-proof model for use in tanks is manufactured. Magnetic tube rotates with the wheels and loads automatically to a thickness of ¾-inch, on the entire 360 degrees of surface. Unloading is accomplished by pushing the wiper ring from one end of the tube to the opposite end where a nonmagnetic area causes instant release of the load. Constant contact with steel will not reduce its magnetic power. Standard sizes ranging from 9 to 24 inches wide are offered.

Check No. 16 on Reply Card for more Details



PROOF:

You want proof that the press you buy will give you maximum quality production with maximum economy. Take the R. D. Wood 250-ton Hydro-Lectric Open-Gap Press shown, for example. Used in flanging, bending, or straightening operations, this press has proved itself in countless plants throughout the country. It does a quality job, keeps operating and maintenance costs at a minimum.

Q. E. D.:

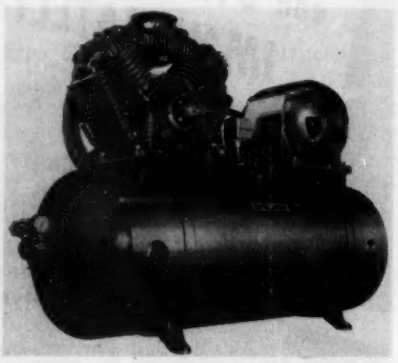
You want a press that demonstrates its worth to you. You'll find such worth inherent in R. D. Wood Presses. In the design, materials, and workmanship which go into the R. D. Wood Press line lies your assurance of demonstrable production and economy. Write now for data on hydraulic presses or hydraulic press problems. R. D. Wood Company, Public Ledger Building, Phila. 5, Pa.

HYDRAULIC PRESSES AND VALVES FOR ... PUMPS ... ACCUMULATORS ... INTENSIFIERS

EST. 1803 R. D. Wood Company PUBLIC LEDGER BUILDING, PHILADELPHIA 5, PA.

Air Compressor

A 4-cylinder balanced V-pump, enlarged cooling system, floating type tank mount and highly sensitive and efficient valve design are features of the V-type air compressor developed by DeVilbiss Co., 300 Phillips Ave., Toledo 1, O. Employing a two stage principle in both banks of



cylinders, the displacement of the 10 hp unit is 47.86 cfm at 175 psi. Similar displacement is attained in the 15 and 7½ hp models, both of which are available for 175 and 125 psi use.

Compressors have dynamically balanced forged crankshafts, forged connecting rods with automotive type prefit bearings, frictionless ball type main bearings, tapered mounting for balanced flywheel, air filter and muffler, ring and centrifugal force oiling, precision bored and honed cylinders, and removable cylinder blocks and valve assemblies. Units are available to operate from all common electrical circuits.

Check No. 17 on Reply Card for more Details

Press Control Unit

Automatic bumping or breathing operations on hydraulic presses may be performed with the model No. 140-X Robotron control unit developed by Emmett Machine & Mfg. Inc., 2249 14th St., S.W., Akron 14, O. Unit can be set to give from 1 to 40 bumps during any one cycle of operation or set to control overall cure time. It is equipped with three built-in time arrangements, any one of which can be selected by a switch.

A range of 21 different cure times

...to Produce Greater Tonnages at Lower Cost!

You can depend on Birdsboro's Individualized Roll Service. That means Birdsboro Rolls are individually engineered to give you the specific combination of analyses and physicals to do its particular job best.

Whether your problem involves ferrous or non-ferrous metals and regardless of the degree of toughness or hardness required, Birdsboro Rolls assure you of greater tonnages, more accuracy, longer uninterrupted production and less replacement cost. On any roll problem, consult Birdsboro engineers first.

BIRDSBORO Type Rolls

*Birdsboro "30"
Birdsboro "40"
Birdsboro "50"
Birdsboro Metal
*Curoloy
Super Curoloy
Grainloy
Superloy
*Diamondite

FOR:

Blooming
Cogging
Roughing
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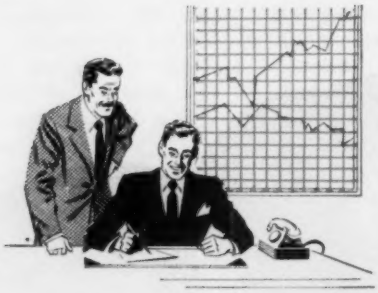
BIRDSBORO
ROLLS
Steel Mill Equipment, Hydraulic Presses, Special Machinery, Crushing Machinery, Steel Castings



Set your Sights on Salability—and Profits

Have you a product problem—that may need help when selling gets a little spotty? If so, you'll want to know how *pre-coated* Thomas Strip can help you stimulate sagging sales—and profits—by (1) cutting your costs, and (2) improving your product.

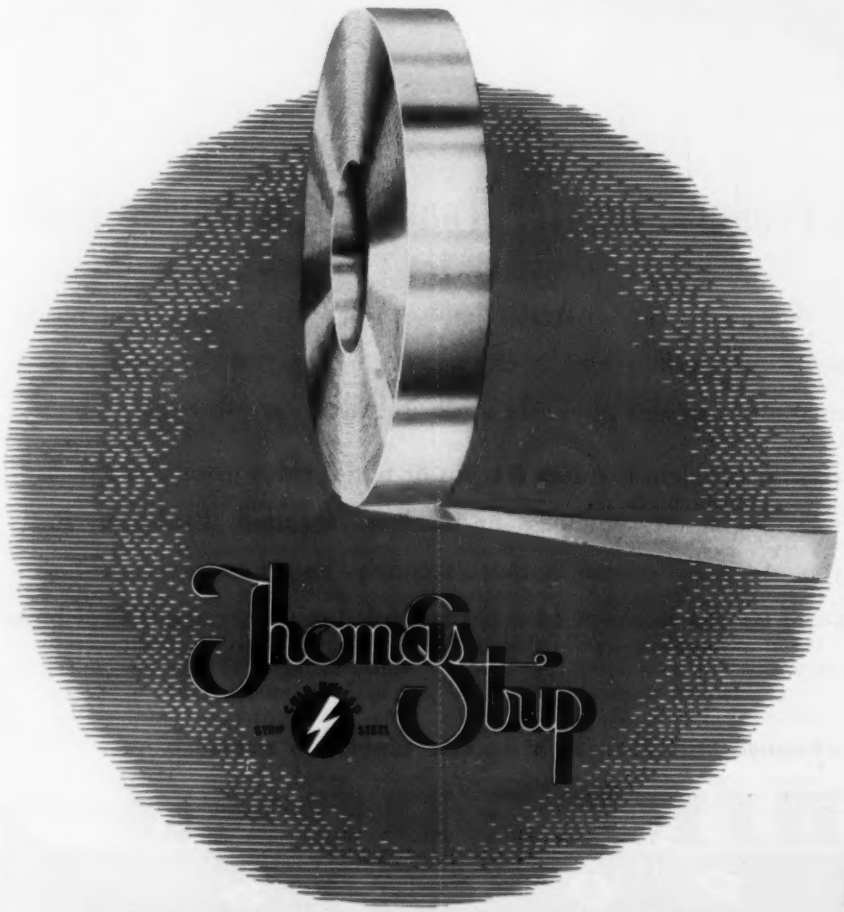
Ready-to-fabricate Thomas Strip streamlines production and cuts costs all along the line. It combines the utility and beauty of nickel, copper, brass or zinc coatings with the economy of steel—gives your products the definite competitive advantages of favorable unit costs, smart appearance and lively consumer acceptance. In short, the snap and sparkle of gleaming Thomas metallic coatings often transform lack-lustre products into brisk best-sellers. Cost-cutting, product-improving details are listed below.

THE THOMAS STEEL COMPANY

WARREN, OHIO

Specialists in Cold Rolled Strip Steel

Electrocoated with Zinc, Copper, Nickel and Brass
• Hot Dipped Tin and Lead Alloy • Lacquer Coated in Colors • Spring Steel • Alloy Strip Steel • Produced to Your Specifications



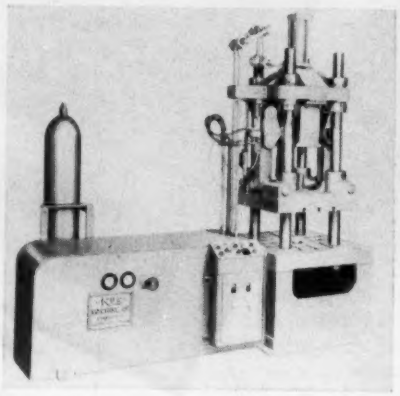
Fabricates Readily—Adds Eye-Appeal

for each setting of the time range switch is provided for. Bumps can be timed to be either alternating or consecutive, as required, for any particular application. Unit is wired for use with limit switches to regulate the amount of press opening during the bumping operations, to close the press after a predetermined time, and to hold the press closed until the next bump.

Check No. 18 on Reply Card for more Details

Die Casting Unit

Designed for the production of parts that have inserts cast in, is the model HP-22 cold chamber vertical-type die casting machine, announced by Kux Machine Co., Chicago Ill. Machine has die plates mounted in a horizontal position while its die plates operate in a vertical direction. Thus castings with inserts can be



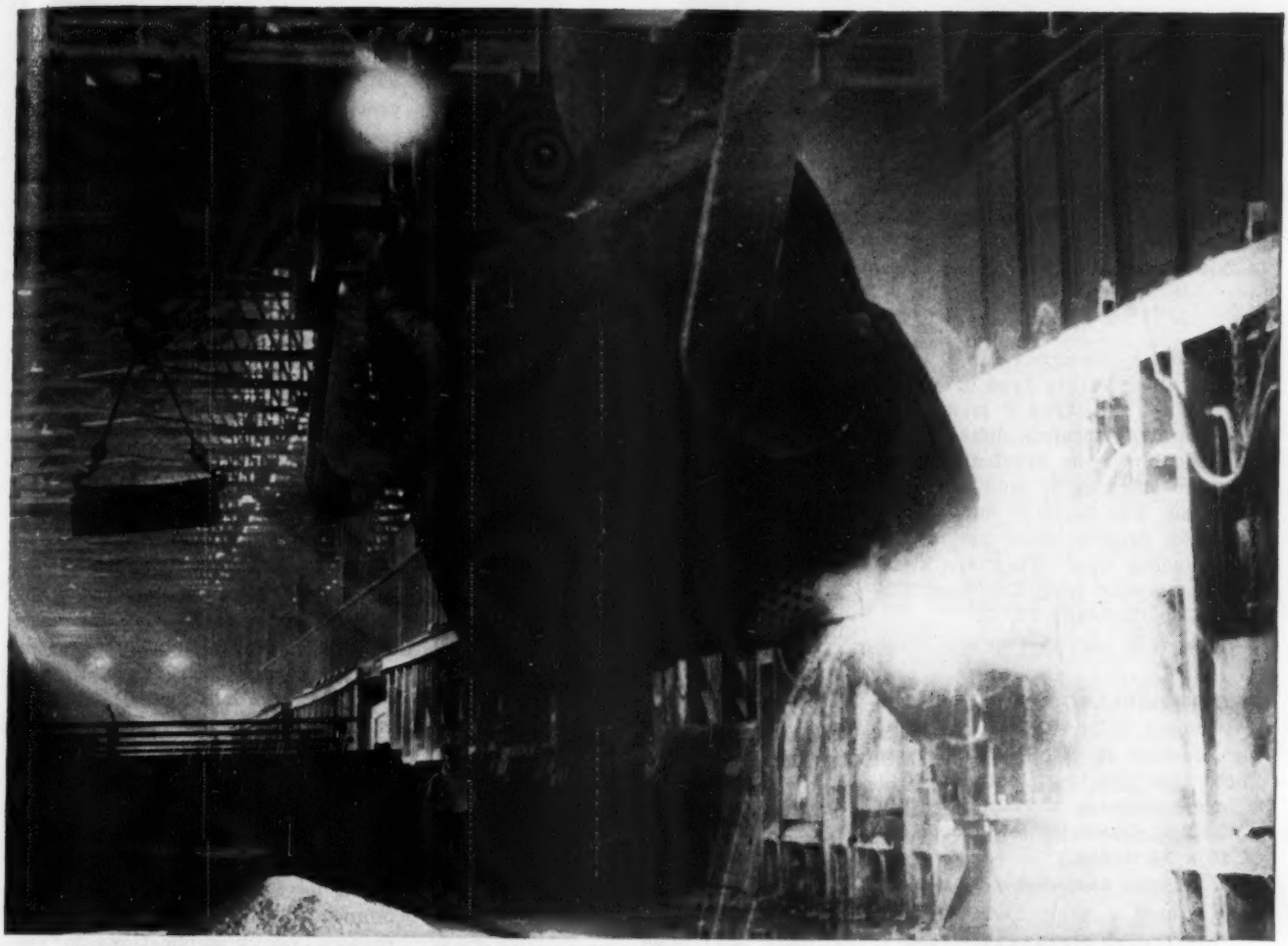
placed in the lower die half without difficulty and the inserts remain in place all through the die casting cycle without falling out of their cavity placement.

Machine is completely hydraulically operated and electrically controlled and has a self-contained operating mechanism. An injection pressure multiplier is available for increasing injection pressure. Castings weighing up to 4½ pounds in aluminum may be produced by the machine which has a die space of 17¾ inches square between the bars.

Check No. 19 on Reply Card for more Details

Roller Conveyors

Gravity roller conveyors made in 5 and 10-foot lengths and widths from 6 to 36 inches in increments of 2 inches are being manufactured by Sage Equipment Co., 30 Essex St., Buffalo 12, N. Y. Rollers are 2 inches in diameter and made of 16 gage steel with special ball bearings on both ends. Hexagon shaped roller axles are set in hexagon holes in the frames so that shaft or cone does



ROBINSON SILICA BRICK
LENGTHENS FURNACE LIFE-SPAN

YOU can depend on longer life with more tonnage per day from a furnace lined with Robinson Silica Brick. There are good reasons why it withstands long, hard service under extreme conditions of furnace operation! High quality ganister is selected for the minimum of harmful impurities before processing. Very low alumina content insures maximum strength at high temperatures. Modern manufacturing methods impart extreme density and high resistance to spalling and slagging. Strict laboratory control in all phases of manufacture keeps quality at a *uniform* high for longer life and better service! Robinson FRC Silica Brick saves you money by decreasing brick consumption and cutting rebuilding costs! For *dependable* furnace performance, it's Robinson Silica Brick — one of the Robinson line of *uniform* refractories!

Write For Your Free Copy Of The Robinson Refractories Catalog
You'll find information in it that you'll use all the time. Just drop a line to The Robinson Clay Product Co., Akron 9, Ohio and we'll mail your copy immediately.

ROBINSON REFRACTORIES ARE *Uniform*

Robinson Engineered Refractories: Silica Brick, Fire Brick, High-Temperature Bonding Mortar, Castable Refractories, Plastic Fire Brick, Acid-Proof Cement, Fire Clays, Super-Duty Plastics.

THE ROBINSON CLAY PRODUCT CO.
AKRON 9, OHIO

R-148-6

not turn on the axle.

Spring locks which hold axles in place allow rollers to be removed from the frame without use of tools. Straight and curved sections alike are of welded steel construction. Light weight and simple connectors make them suitable for one-man assembly and handling.

Check No. 20 on Reply Card for more Details

• • •

VIBRATORS: Designed for installation on almost every type of hopper and storage bin, type F pneumatically operated vibrators deliver hammer-like blows to prevent arching over and plugging of sand, coal, ore, lime, slag and chips in bins having capacities ranging from one to several hundred tons. They are available in six sizes from Cleveland Vibrator Co., Cleveland 13, O.

Check No. 21 on Reply Card for more Details

PHOTO COPYING MACHINE: Victory model E Tru-Copy-Phote copying machine if offered by General Photo Products Co., Chatham, N. J. It accommodates anything written, printed or drawn up to surface size of 16 x 24 inches.

Check No. 22 on Reply Card for more Details

PROTECTIVE COATING: Chem-Peel, made by Chemclean Products Corp., New York 13, N. Y., is a plastic emulsion that can be applied either by spraying or dipping and imparts to the surfaces so treated, a film of plastic which can be easily peeled off.

Check No. 23 on Reply Card for more Details

FIRE EXTINGUISHER: Stop - Fire Inc., Brooklyn 1, N. Y., offers an automatic sprinkler fire extinguisher. Unit is constructed of heavy brass, silver welded, needs no piping or other installation. It is hung up, ready to operate, utilizing a fire extinguisher fluid known as C. B. M. or chlorobromomethane. It is effective on oil, grease, flammable liquid, lacquer, paint, solvent or electrical fires.

Check No. 24 on Reply Card for more Details

BRINELL HARDNESS READER: Harry W. Dietert Co., Detroit 4, Mich., offers a Brinell hardness reader for use on any machined, rough ground or cast surface. Number is read directly from the dial.

Check No. 25 on Reply Card for more Details

REVERSING CONTACTOR: A small reversing contactor offered by Struthers-Dunn Inc., Philadelphia 7, Pa., is constructed for continuous duty control of alternating or direct current equipment such as hoists, door operators and motorized valves. Designated as type 175KK, it consists of two 3-pole solenoids for forward and reverse operation mounted on a common frame and mechanically interlocked to prevent simultaneous closure.

Check No. 26 on Reply Card for more Details

CONTROL VALVES: To control several oil-hydraulic cylinders simultaneously, Hydraulic Equipment Co., Cleveland 17, O., has developed V13 series control valve. It can be furnished with control plungers for actuating two, three or four single-acting or double-acting cylinders at operating pressures up to 1400 psi.

Check No. 27 on Reply Card for more Details

HAND TORCH: Industrial Engineered Products Co., Los Angeles 46, Calif., offers I.C.C. approved Torchmaster, a general utility, self-contained hand torch. It is 2¼ x 13 inches and burns liquid petroleum gas. It will do light brazing, soldering and innumerable heating operations.

Check No. 28 on Reply Card for more Details

HEATER: Model 300 direct fired unit heater is announced by Thermobloc division of Prat-Daniel Corp., East Port Chester, Conn. It is 7 feet high, 30 inches in diameter with an output of 300,000 Btu.

Check No. 29 on Reply Card for more Details

PACKAGED SEAL UNIT: Designed for horizontal and vertical rotating shafts, a new packaged seal unit is announced by Gits Bros. Mfg. Co., Chicago 23, Ill. With both rotating and stationary surfaces built inside a metal cartridge, this seal permits foolproof installation. It uses a radial seal joint.

Check No. 30 on Reply Card for more Details

MAGNETIC COUNTER: Series 1248 magnetic reset counter, offered by Veeder-Root Inc., Hartford 2, Conn., features the Easy-Eye direct reading line of six large figures. It is especially adapted to remote-indication from plant to office.

Check No. 31 on Reply Card for more Details

TIMER: Type 30HLl is an automatic timer for intervals from 1/20th second to 4 minutes offered by Photoswitch Inc., Cambridge 42, Mass. It provides four basic types of timing: Interval, delayed action, automatic repeat and programming, as well as variations of these fundamental types. It is recommended for process control and machine timing when long life repeat cycle operation or precise accuracy is a prerequisite.

Check No. 32 on Reply Card for more Details

RECESSING TOOL: A large size automatic recessing tool for use on radial drills, boring mills and large boring machines as well as drill presses is offered by Maxwell Co., Bedford, O. Because of the ball bearing loaded pilot feature, it can be used in conjunction with existing fixtures.

Check No. 33 on Reply Card for more Details

ELECTRODE: Eutectrode 24/49 in ¼-inch size to handle heavy cast iron castings is announced by Eutectic Welding Alloys Corp., New York 13, N. Y. It is particularly adaptable for overlaying and repairing large turbines, pumps, impellers, mixers, cylinder heads, housings and other heavy types of castings.

Check No. 34 on Reply Card for more Details

GREASE: A new aluminum-soda base grease with a high melting point has been developed by E. F. Houghton & Co., Philadelphia, Pa. Designated as Sta-Put 18H-2, it is recommended for large heavily loaded presses, heavy applications in contracting, mining and dredging equipment, hoists, cranes and similar heavy industrial applications.

Check No. 35 on Reply Card for more Details

WELD-TIME METER: For measuring the duration of welding current Westinghouse Electric Corp., Pittsburgh 30, Pa., has developed a weld-time meter. It is a portable, direct reading instrument which totals weld time and gives values in seconds and cycles. Calibrating device is built-in.

Check No. 36 on Reply Card for more Details

ALUMINUM FINISH: Special Chemicals Corp., New York, N. Y., offers Spekaluminite, a coating that adheres to all metals and plastics. It may be applied by dipping or spraying and is then baked on. It has a temperature resistance of over 700° F.

Check No. 37 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

STEEL producers are drawing more heavily on order backlogs to sustain ingot operations at a high level with new buying still declining. Some of the smaller mills, chiefly those that have been charging premium prices, already have found it necessary to curtail operations substantially, and other producers may take similar action soon unless buyers resume ordering in much greater volume than they have over recent weeks.

BUYING—New business, generally, is reported at the lowest ebb since before the war and the immediate outlook is not promising for a substantial pickup in ordering with consumers displaying an unusual degree of caution in covering forward needs. Several factors are serving to effectively throttle new buying at present: 1. Uncertainty with respect to the future trend of prices; 2. threatened widespread labor trouble, which already has forced substantial curtailment in manufacturing operations; 3. desire of consumers to work off inventories; 4. continued lag in sales of durable goods at the retail level.

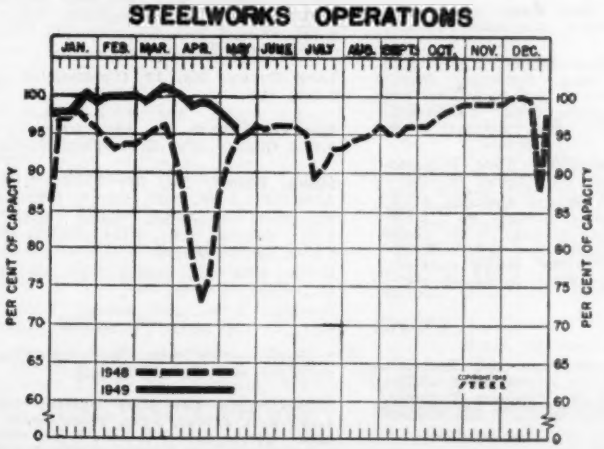
DEMAND—Slack demand in the steel market is reflected chiefly in alloys and certain specialties. However, backlogs also are shrinking noticeably in such major products as shapes, plates and bars, cast and line pipe. Buying of tubular goods has developed a decided lag and wire products are moving slowly. Sheets and strip continue to ease although, in general, pressure for these products still is experienced. Cold-rolled and galvanized sheets are still definitely in tight supply. Adding to complications, steel sellers report not only continued slackening in buying but further order cancellations and deferments as well, all of which is hastening the time when steelmaking operations will have to be cut at a more accelerated rate.

OPERATIONS—The national ingot rate last week dropped another 1½ points to 95.5 per cent of capacity, a new low point for the year, and off about six points since the peak was attained in mid-March. Production of steel in April was record-breaking for that month at 7,783,807 net tons, the ingot rate for the period averaging 98.4 per cent of capacity. In the first four months of this year output totaled 31,835,953 net tons, an increase of almost 3,600,000 tons, or 12.6 per cent over that in the like period of 1948.

PRICES—Additional downward adjustments in premium prices on various products continue to be made. Several more sheet and strip producers have revised extras to levels competitive with those of the leading producer. One pig iron producer last week announced a reduction of $4 per ton in the South in line with a similar cut by other interests a week ago. Galvanized product prices again have been revised downward to reflect another drop in the price of zinc. An eastern producer has reduced base prices on alloy and heat-treated carbon bolts and studs about 3 per cent. A western producer was reported to have reduced prices on plates $19 per ton. STEEL's composite price average on steelmaking pig iron eased to $45.60 last week from $45.85 the preceding week, and compares with $39.21 in the like week a year ago. The steelmaking scrap composite fell to $22.25 from $23.25 and compared with $40.67 a year ago. Other composites held unchanged from a week ago and compared with the like week a year ago as follows: Finished steel, $93.55 and $80.27; semifinished steel, $66.72 and $68.62.

RAW MATERIALS—Merchant sellers are piling pig iron in the continued absence of substantial new buying. Foundry iron demand is reported the slowest in years at most market centers, though a Cleveland seller notes a slight revival of buying interest over the past week or so. At the same time the scrap market continues as sluggish as ever with the steel mills and foundries taking only limited tonnages.

STEELWORKS OPERATIONS



DISTRICT STEEL RATES

Percentage of Ingot Capacity engaged in Leading Districts

	Week Ended May 14	Change	Same Week 1948	Same Week 1947
Pittsburgh	94.5	— 1.5*	95	102
Chicago	99.5	— 1*	93.5	89
Eastern Pa.	92.5	— 0.5	88	91.5
Youngstown	105	None	103	93
Wheeling	90	— 1.5	97.5	93.5
Cleveland	100.5	+ 2.5	96	91
Buffalo	101.5	None	93	86
Birmingham	100	None	100	99
New England	64	+ 4	78	95
Cincinnati	101	— 2	104	89
St. Louis	75.5	None	78	68.5
Detroit	69	—28	100	90
Western	93	+ 1	..	..
Estimated national rate	95.5	— 1.5	94.5	94.5

Based on weekly steelmaking capacity of 1,843,516 net tons for 1949; 1,802,476 net tons for 1948; 1,749,928 tons for 1947. * Revised.

COMPOSITE MARKET AVERAGES

Arithmetical Price Composites*

	May 14	May 7	Month Ago Apr. 1949	Year Ago May 1948	5 Years Ago May 1944
Finished Steel	$93.55	$93.55	$94.48	$80.27	$56.73
Semifinished Steel	66.72	66.72	68.45	68.62	36.00
Steelmaking Pig Iron	45.60	45.85	46.16	39.66	23.00
Steelmaking Scrap	22.25	23.25	24.06	40.67	19.17

FINISHED STEEL WEIGHTED COMPOSITE†

Apr. 1949	4.02714c
Mar. 1949	4.05098c
Feb. 1949	4.06149c
Apr. 1948	3.62766c
Apr. 1944	2.43493c

* **STRAIGHT ARITHMETICAL COMPOSITES:** Computed from average industry-wide mill prices on Finished Carbon Steel (hot-rolled sheets, cold-rolled sheets, cold-rolled strip, hot-rolled bars, plates, structural shapes, basic wire, standard nails, tin plate, standard and line pipe), on Semifinished Carbon Steel (re-rolling billets and slabs, sheet bars, skelp, and wire rods), on Basic Pig Iron (at eight leading producing points), and on Steelworks Scrap (No. 1 melting grade at Pittsburgh, Chicago and eastern Pennsylvania). Steel arithmetical composites, dollars per net ton; pig iron and scrap, gross ton.

† **FINISHED STEEL WEIGHTED COMPOSITE:** Computed in cents per pound, mill prices, weighted by actual monthly shipments of following products, representing about 82 per cent of steel shipments in the latest month for which statistics are available, as reported by American Iron & Steel Institute: Structural shapes; plates, standard rails; hot and cold-finished carbon bars; black butt weld pipe and tubes; black lap weld pipe and tubes; black electric weld pipe and tubes; black seamless pipe and tubes; drawn wire; nails and staples; tin and terne plate; hot-rolled sheets; cold-rolled sheets; galvanized sheets; hot-rolled strip; and cold-rolled strip. April, 1949, figure is preliminary.

COMPARISON OF PRICES

Representative market figures for current week; average for last month, three months and one year ago. Finished material (except tin plate) and wire rods, cents per lb; semifinished (except wire rods) and coke, dollars per net ton, others dollars per gross ton. Delivered prices represent lowest from mills.

Finished Materials

	May 14, 1949	Apr. 1949	Feb. 1949	May 1948
Steel bars, Pittsburgh mills	3.35c	3.35c	3.45c	2.875c
Steel bars, del. Philadelphia	3.8164	3.8164	3.8164	3.365
Steel bars, Chicago mills	3.35	3.35	3.35	2.875
Shapes, Pittsburgh mills	3.25	3.25	3.275	2.775
Shapes, Chicago mills	3.25	3.25	3.25	2.775
Shapes, del. Philadelphia	3.4918	3.4918	3.48	2.98
Plates, Pittsburgh mills	3.40	3.50	3.50	2.925
Plates, Chicago mills	3.40	3.40	3.40	2.925
Plates, del. Philadelphia	3.6348	3.6348	3.7256	3.21
Sheets, hot-rolled, Pittsburgh mills	3.25	3.26	3.275	2.775
Sheets, cold-rolled, Pittsburgh	4.00	4.00	4.00	3.50
Sheets, No. 10 galv., Pittsburgh	4.40	4.40	4.40	3.90
Sheets, hot-rolled, Gary mills	3.25	3.25	3.25	2.775
Sheets, cold-rolled, Gary mills	4.00	4.00	4.00	3.50
Sheets, No. 10 galv., Gary mills	4.40	4.40	4.40	3.90
Strip, hot-rolled, Pittsburgh mills	3.275	3.50	3.275	3.05
Strip, cold-rolled, Pittsburgh mills	4.375	4.375	4.375	3.775
Bright basic, wire, Pittsburgh	4.15	4.15	4.325	3.725
Wire nails, Pittsburgh mills	5.15	5.15	5.775	5.125
Tin plate, per base box, Pitts. dist.	$7.75†	$7.75†	$7.75†	$6.80

Semifinished

Sheet bars, mill	$67.00*	$67.00*	$67.00*	$60.00
Slabs, Chicago	52.00	52.00	52.00	45.00
Rerolling billets, Pittsburgh	52.00	52.00	59.00	45.00
Wire rod $\frac{7}{32}$ to ¼-inch, Pitts. dist.	3.775c	3.775c	3.775c	3.175c

* Nominal. † 1.50 lb coating.

Pig Iron

	May 14, 1949	Apr. 1949	Feb. 1949	May 1948
Bessemer, del. Pittsburgh (N.&S. sides)	$48.08	$48.08	$48.08	$41.038
Basic, Valley	46.00	46.00	46.00	39.00
Basic, eastern, del. Philadelphia	49.39	49.6175	50.3002	42.17
No. 2 fdry., del. Pgh. (N.&S. sides)	47.58	47.58	47.58	40.538
No. 2 fdry., del. Philadelphia	49.89	50.1175	50.8002	42.67
No. 2 foundry, Chicago	46.25	46.25	46.25	39.00
No. 2 foundry, Valley	46.50	46.50	46.50	39.50
Southern No. 2 Birmingham	39.38	43.38	43.38	38.63
Southern No. 2 del. Cincinnati	45.43	49.43	49.43	43.90
Malleable, Valley	46.50	46.50	46.50	39.50
Malleable, Chicago	46.50	46.50	46.50	39.50
Charcoal, low phos., fob Lyles, Tenn.	66.00	66.00	66.00	56.50
Ferromanganese, f.o.b. Etna, Pa.	175.00	175.00	163.00	151.00*

* F.o.b. cars Pittsburgh.

Scrap

Heavy melt. steel, No. 1, Pittsburgh	$23.00	$25.12	$40.00	$40.25
Heavy melt. steel, No. 2, E. Pa.	19.75	20.69	35.69	39.00
Heavy melt. steel, No. 1 Chicago	21.00	23.75	35.75	39.25
Heavy melt. steel, No. 1 Valley	22.00	22.75	37.75	40.25
Heavy melt. steel, No. 1 Cleveland	18.50	20.38	37.25	39.75
Heavy melt. steel, No. 1, Buffalo	23.25	24.38	40.50	43.00
Rails for rerolling, Chicago	27.75	31.31	48.19	51.75
No. 1 cast, Chicago	27.50	30.25	44.25	69.00

Coke

Connellsville, beehive furnace	$14.25	$14.44	$14.50	$12.94
Connellsville, beehive foundry	16.75	17.00	17.00	15.06
Chicago, oven foundry, ovens	20.40	20.40	20.40	19.50

FINISHED AND SEMIFINISHED IRON, STEEL PRODUCTS

Finished steel quoted in cents per pound and semifinished in dollars per net ton, except as otherwise noted. Prices apply on an individual producer basis to products within the range of sizes, grades, finishes and specifications produced at its plants.

Semifinished Steel

Carbon Steel Ingots: Rerolling quality, standard analysis, open market, $80-$85 per gross ton. Forging quality, $50 per net ton, mill.

Alloy Steel Ingots: $51 per net ton, mill.

Rerolling Billets, Blooms, Slabs: $52 per net ton, mill, except: $57, Conshohocken, Pa.

Forging Quality Billets, Blooms, Slabs: $61 per net ton, mill, except: $63, Conshohocken, Pa., mill.

Alloy Billets, Slabs, Blooms: Rerolling quality, $63 per net ton, mill except: $65, Conshohocken, Pa.

Sheet Bars: $67 nom., per net ton, mill; sales in open market $65-$75 per gross ton.

Skelp: 3.25c per lb, mill.

Tube Rounds: $76 per net ton, mill; some sellers quoting up to $120 per gross ton.

Wire Rods: Basic and acid open-hearth, 7/32 & ¾-inch, inclusive, 3.40c per lb, mill, except: 3.65c, Struthers, O.; 3.70c, Worcester, Mass.; 4.05c, Pittsburg, Calif.; 4.10c, Los Angeles; 4.15c Monessen, Pa. Basic open-hearth and bessemer, 7/23 to 47/64-in., inclusive, 3.50c, Sparows Point, Md.

Bars

Hot-Rolled Carbon Bars (O.H. only; base 20 tons): 3.35c, mill, except: 3.55c, Ecorse, Mich.; 4.00c Fontana, Calif.; 4.05c, Pittsburg, Torrance, Calif.; 4.10c, S. San Francisco, Los Angeles, Niles, Calif.; Portland, Oreg., Seattle; 4.20c, Kansas City, Mo.; 4.25c, Minnequa, Colo.; 4.40c, Atlanta.

Rail Steel Bars: (Base 10 tons): 3.35c Huntington, W. Va., and Moline, Ill.; 4.00c, Williamsport, Pa.

Hot-Rolled Alloy Bars: 3.75c, mill, except: 4.05c, Ecorse, Mich.; 4.80c, Los Angeles; 4.75c, Fontana, Calif.

Cold-Finished Carbon Bars (Base 40,000 lb and over): 4.00c, mill, except: 3.95c, Pittsburgh, Cumberland, Md.; 4.20c, Indianapolis; 4.30c, Ecorse, Mich.; 4.35c, St. Louis; 4.36c, Plymouth, Mich.; 4.40c, Newark, N. J., Hartford, Putnam, Conn., Mansfield, Readville, Mass.; 4.50c, Camden, N. J.; 5.40c, Los Angeles.

Cold-Finished Alloy Bars: 4.65c, mill, except: 4.85c, Indianapolis; 4.95c, Worcester, Mansfield, Mass., Hartford, Conn.

High-Strength, Low-Alloy Bars: 5.10c, mill, except: 5.30c, Struthers, O.; 5.40c, Ecorse, Mich.

Reinforcing Bars (New Billet): 3.35c, mill, except: 4.05c, Pittsburg, Torrance, Calif.; 4.10c, Atlanta, Seattle, S. San Francisco, Los Angeles; 4.25c, Minnequa, Colo. Fabricated: To consumers: 4.25c, mill, except: 5.00c, Seattle.

Reinforcing Bars (Rail Steel): 3.85c, Williamsport, Pa., mill; 3.35c, Huntington, W. Va.

Wrought Iron Bars: Single Refined: 8.60c, (hand puddled), McKees Rocks, Pa.; 9.50c, Economy, Pa. Double Refined: 11.25c (hand puddled), McKees Rocks, Pa.; 11.00c, Economy, Pa. Staybolt: 12.75c, (hand puddled), McKees Rocks, Pa.; 11.30c, Economy, Pa.

Sheets

Hot-Rolled Sheets (18 gage and heavier): 3.25c, mill, except: 3.45c, Ecorse, Mich.; 3.75c, Conshohocken, Pa.; 3.95c, Pittsburg, Torrance, Calif.; 4.15c, Fontana, Calif.; 6.25c, Kansas City, Mo.

Hot-Rolled Sheets (19 gage and lighter, annealed): 4.15c, mill, except: 4.40c, Alabama City, Ala.; 5.05c, Torrance Calif.; 5.25c, Kokomo, Ind.

Cold-Rolled Sheets: 4.00c, mill, except: 4.20c, Ecorse, Mich., Granite City, Ill.; 4.95c, Pittsburg, Calif.

Galvanized Sheets, No. 10: (Based on 5 cent zinc) 4.40c, mill, except: 4.80c, Kokomo, Ind.; 5.15c, Pittsburgh, Torrance, Calif.

Galvannealed Sheets: 4.95c, mill, except: 5.05c, Indiana Harbor, Ind.; 5.30c, Kokomo, Ind.

Culvert Sheets, No. 16 flat Copper Steel (based on 5-cent zinc): 5.00c, mill, except: 5.40c, Granite City, Ill., Kokomo, Ind.; 5.75c, Pittsburg, Torrance, Calif.

Long Ternes, No. 10 (Commercial quality): 4.80c, mill.

Enameling Sheets, No. 12: 4.40c, mill, except: 4.60c, Granite City, Ill.; 4.70c, Ecorse, Mich.

Silicon Sheets, No. 24: Field: 5.15c, mill. Armature: 5.45c, mill, except: 5.95c, Warren. Electrical: Hot-rolled, 5.95c, mill, except: 6.05c, Kokomo, Ind.; 6.15c, Granite City, Ill.; 6.45c, Warren, O.

Motor: 6.70c mill, except: 6.90c, Granite City, Ill.; 7.20c, Warren, O.

Dynamo: 7.50c, mill, except: 7.70c, Granite City, Ill.

Transformer 72, 8.05c, mill; 65, 8.60c, mill, 58, 9.30c, mill, 52, 10.10c, mill.

High-Strength Low-Alloy Sheets: Hot-rolled, 4.95c, mill, except; 5.15c, Youngstown, Ecorse, Mich. Galvanized (No. 10), 6.75c, mill. Cold-rolled, 6.05c, mill, except: 6.25c, Youngstown, Ecorse, Mich.

Strip

Hot-Rolled Strip: 3.25c mill, except: 3.30c, Cleveland; 3.45c, Ecorse, Mich.; 3.60c, Detroit; 3.65c, Atlanta; 4.00c, Pittsburg, Torrance, Calif.; 4.20c, Kansas City, Mo.; 4.25c, Seattle, San Francisco, Los Angeles; 4.30c, Minnequa, Colo.; 4.65c, Fontana, Calif. One company quotes 4.90c, Pittsburgh base.

Cold-Rolled Strip (0.25 carbon and less); 4.00c, mill, except: 4.00-4.25c, Warren, O.; 4.00-4.50c, New Castle, Pa., Youngstown; 4.15c, Riverdale, Ill.; 4.20c, Ecorse, Mich.; 4.40-4.50c, Detroit; 4.50c New Haven, Conn., Boston; 4.75c, Dover, O., New Kensington, Pa.; 4.50-5.00c, Trenton, N.J.; 4.85c, Wallingford, Conn.; 5.55c, Fontana, Calif.; 5.75c, Los Angeles. One company quotes 4.55c, Cleveland or Pittsburgh base, and 4.75c, Worcester, Mass., base; another, 5.00c, Pittsburgh base, and 4.75c, Worcester, Mass., base; another, 5.00c, Pittsburgh base.

Cold-Finished Spring Steel: 0.26-0.40 C, 4.00c, mill, except: 4.25c, Dover, O., Chicago; 4.30c, Worcester, Mass.; 4.25-4.50c, New Castle, Pa., Boston, Youngstown; 4.75c, Wallingford, Conn. Over 0.40 to 0.60 C, 5.50c, mill, except: 5.65c, Chicago; 5.75c, Dover, O.; 5.80c, Worcester, Mass., Wallingford, Conn., Trenton, N. J.; 5.95c, Boston; 6.00c, New Castle, Pa. Over 0.60 to 0.80 C, 6.10c, mill, except: 6.25c, Chicago; 6.35c, Dover, O.; 6.40c, Worcester, Mass., Wallingford, Bristol, Conn., Trenton, N. J.; 6.60c, New Castle, Pa. Over 0.80 to 1.05 C, 8.05c, mill, except: 7.85c, Dover, O.; 8.20c, Chicago; 8.35c, Worcester, Mass., Bristol, Conn., Trenton and Harrison, N. J. Over 1.05 to 1.35 C, 10.35c, mill, except: 10.15c, Dover, O.; 10.30c, Wallingford, Conn.; 10.50c, Chicago; 10.65c, Worcester, Mass., Trenton and Harrison, N. J.

Cold-Rolled Alloy Strip: 9.50c, mill except: 9.80c, Worcester, Mass.

High-Strength, Low-Alloy Strip: Hot-rolled, 4.95c, mill, except: 5.15c, Struthers, O.; 5.25c, Ecorse, Mich., mill. Cold-rolled, 6.05c, mill, except: 6.25c, Youngstown; 6.35c, Ecorse, Mich., mill.

Tin, Terne, Plate

Tin Plate: American Coke, per base box of 100 lb, 1.25 lb coating $7.50-$7.70; 1.50 lb coating $7.75-$7.95. Pittsburg, Calif., mill $8.25 and $8.50, respectively, for 1.25 and 1.50 lb coatings.

Electrolytic Tin Plate: Per base box of 100 lb, 0.25 lb tin, $6.45-$6.65; 0.50 lb tin, $6.70-$6.90; 0.75 lb tin, $7.00-$7.20.

Can Making Black Plate: Per base box of 100 lb, 55 to 128 lb basis weight $5.75-$5.85. Pittsburg, Calif., mill, $6.50.

Holloware Enameling Black Plate: 29-gage, 5.30c per pound, except: 5.40c, Sparrows Point, Md.; 5.50c, Granite City, Ill.

Manufacturing Ternes (Special Coated): Per base box of 100 lb, $6.65, except: $6.75 Fairfield, Ala., Sparrows Point, Md.

Roofing Ternes: Per package 112 sheets; 20 x 28 in., coating I.C. 8-lb, $15.50.

Plates

Carbon Steel Plates: 3.40c, mill, except: 3.40-3.60c, Cleveland; 3.45c, Sparrows Point, Md., Johnstown, Pa., Lackawanna, N. Y.; 3.50c, Coatesville, Pa.; 3.55c, Conshohocken, Pa.; 3.65c, Claymont, Del., Ecorse, Mich.; 3.95c, Harrisburg, Pa.; 4.30c, Seattle, Minnequa, Colo.; 4.56c, Houston; 4.35c, Fontana, Calif.; 6.25c, Kansas City, Mo.

Floor Plates: 4.55c, mill.

Open-Hearth Alloy Plates: 4.40c, mill, except: 4.50c, Coatesville, Pa., mill.

High-Strength, Low-Alloy Plates: 5.20c mill, except: 5.30c, Conshohocken, Pa., Sparrows Point, Md., Johnstown, Pa.; 5.40c, Youngstown; 5.65c, Ecorse, Mich., Sharon, Pa.

Shapes

Structural Shapes: 3.25c, mill, except: 3.30c, Bethlehem, Johnstown, Pa., Lackawanna, N. Y.; 3.75c, Phoenixville, Pa.; 3.85c, Torrance, Calif.; 4.15c, Minnequa, Colo.; 4.30c, Seattle, S. San Francisco, Los Angeles; 3.80c, Fontana, Calif.

Alloy Structural Shapes: 4.05c, mill.
Steel Sheet Piling: 4.05c, mill.

High-Strength, Low-Alloy Shapes: 4.95c, mill, except: 5.05c, Bethlehem, Johnstown, Pa., Lackawanna, N. Y.; 5.15c, Struthers, O.

Wire and Wire Products

Wire to Manufacturers (carloads): Bright, Basic or Bessemer Wire, 4.15c, mill, except: 4.25c, Sparrows Point, Md., Kokomo, Ind.; 4.45c, Worcester, Mass.; 4.50c, Minnequa, Colo., Atlanta, Buffalo; 4.80c, Palmer, Mass.; 5.10c, Pittsburg, Calif.; 5.15c, S. San Francisco. One producer quotes 4.15c, Chicago base; another, 4.50c, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Basic MB Spring Wire, 5.55c, mill, except: 5.65c, Sparrows Point, Md.; 5.85c, Worcester, Palmer, Mass., Trenton, N. J.; 6.50c, Pittsburg, Calif.

Upholstery Spring Wire, 5.20c mill, except: 5.30c, Sparrows Point, Md., Williamsport, Pa., Portsmouth, O.; 5.50c, Worcester, Mass., Trenton, N. J., New Haven, Conn.; 6.15c, Pittsburg, Calif.

Wire Products to Trade (carloads): Merchant Quality Wire: Annealed (6 to 8 Gage base), 4.80c, mill, except: 4.90c, Sparrows Point, Md., Kokomo, Ind., Portsmouth, O.; 5.10c Worcester, Mass.; 5.15c, Minnequa, Colo.; 5.20c, Atlanta; 5.75c, S. San Francisco, Pittsburg, Calif. One producer quotes 4.80c, Chicago and Pittsburgh base; another, 5.20c. Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Galvanized (6 to 8 Gage base), 5.25c, mill, except: 5.35c, Sparrows Point, Md., Kokomo, Ind., Portsmouth, O.; 5.55c, Worcester, Mass.; 5.60c, Minnequa, Colo.; 5.65c, Atlanta; 6.20c, Pittsburg, S. San Francisco, Calf. One producer quotes 5.25c, Pittsburgh and Chicago base; another, 5.65c, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Nails and Staples: Standard, cement-coated and galvanized nails and polished and galvanized staples, Col. 103, mill, except: 105, Sparrows Point, Md., Kokomo, Ind., Portsmouth, O.; 109, Worcester, Mass.; 110, Minnequa, Colo., Atlanta, Cleveland; 123, Pittsburg, Calif. One producer quotes Col. 103, Chicago and Pittsburgh base; another, Col. 113, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Woven Fence (9 to 15½ Gage, inclusive): Col. 109, mill, except: 111, Portsmouth, O., Kokomo, Ind.; 116, Minnequa, Colo.; 121, Atlanta; 132, Pittsburg, Calif. One producer quotes Col. 109, Pittsburgh and Chicago base; another, Col. 114, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Barbed Wire: Col. 123 mill, except: 125, Sparrows Point, Md., Kokomo, Ind., Portsmouth, O.; 126 Atlanta; 130, Minnequa, Colo.; 143, Pittsburg, Calif.; 145, S. San Francisco. One producer quotes Col. 123, Chicago and Pittsburgh base.

Fence Posts (with clamps): Col. 114, Duluth; 116, Moline, Ill.; 122, Minnequa, Colo.; 125, Johnstown, Pa.; $123.50 per net ton, Williamsport, Pa.

Bale Ties (single loop): Col. 106, mill, except: 108, Sparrows Point, Md., Kokomo, Ind., Portsmouth, O.; 110, Atlanta; 113, Minnequa, Colo.; 130, S. San Francisco, Pittsburg, Calif. One producer quotes Col. 115, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Bolts, Nuts

Prices to consumers, f.o.b. midwestern plants. Sellers reserve right to meet competitors' prices, if lower. Additional discounts on carriage and machine bolts, 5 for carloads; 15 for full containers, except tire and plow bolts.

Carriage and Machine Bolts

½-in. and smaller; up to 6 in. in length	35 off
⅝ and ⅝ x 6-in. and shorter	37 off
¾-in. and larger x 6-in. and shorter	34 off
All diameters longer than 6-in.	30 off
Tire bolts	25 off
Plow bolts	47 off
Lag bolts, 6 in. and shorter	37 off
Lag bolts, longer than 6 in.	35 off

Stove Bolts

In packages, nuts separate, 58½-10 off; bulk 70 off on 15,000 of 3-in. and shorter, or 5000 over 3 in., nuts separate.

Nuts

Semifinished hexagon	A.S. Light	A.S. Reg. and Heavy
⅜-in. and smaller	41 off	.....
½-in. and smaller	.....	38 off
⅝-in.-1-in.	39 off	.....
⅝-in.-1-in.	.....	37 off
1¼-in.-1½-in.	37 off	35 off
1⅝-in. and larger	34 off	28 off

Additional discount of 15 for full containers.

Hexagon Cap Screws (Packaged)

Upset 1-in. smaller by 6-in. and shorter (1020 bright)	46 off
Upset (1035 heat treated)	
⅝ and smaller x 6 and shorter	40 off
¾, ⅞, & 1 x 6-in. and shorter	35 off

Square Head Set Screws

Upset 1-in. and smaller	51 off
Headless, ¼-in. and larger	31 off

Rivets

F.o.b. midwestern plants

Structural ½-in. and larger	6.75c
⅜-in. and under	48 off

Washers, Wrought

F.o.b. shipping point, to jobbers. . Net to $1 off

For prices of stainless and tool steels please refer to May 9 issue, Page 153.

Tubular Goods

Standard Steel Pipe: Mill prices in carlots, threaded and coupled, to consumers about $200 a net ton. Discounts from base follow:

	Butt Weld			Butt Weld	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	39½–	13–	1	46½–	28–
	41½	13½		48½	32½
¼	37½–	14½–	1¼	47–	28½–
	39½	15		49	33
⅜	34–	9½–	1½	47½–	29–
	36	11½		49½	33½
½	41–	21–	2	48–	29½–
	43	25½		50	34
¾	44–	25–	2½, 3..	48½–	30–
	46	29½		50½	34½
			3½ & 4.	44½	28

	Lap Weld		Elec. Weld		Seamless	
In.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
2	40½	24	38½	19	28–	11½–
					38½	22
2½	44½	28	41½	22	33½–	17–
					41½	25
3	44½	28	41½	22	36–	19½–
					41½	25
3½&4	42½–	22½–	43½	24	38½–	22–
	46½	30			43½	27
5 & 6.	42½–	22½–	43½	24	43½	23½–
	44½	28				27
7	....	....	....	....	43½	26

Line Steel Pipe: Mill prices in carlots to consumers about $200 a net ton.

	Butt Weld			Butt Weld	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	40½	11½	1¼	46–	27½–
¼	38½	13½		48	32
⅜	35	9½	1½	46½–	28–
½	40–	20–		48½	32½
	42	24½	2	47–	28½–
¾	43–	24–		49	33
	45	28½	2½ & 3	47½–	29–
1	45½–	26–		49½	33½
	47½	31½	3½ & 4.	43½	27

	Lap Weld		Elec. Weld		Seamless	
In.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
2	39½	23	37½	18	27–	10–
					37½	21
2½	43½	27	40½	21	32½–	15½–
					40½	24
3	43½	27	40½	21	35–	18–
					40½	24
3½-4	41½–	21½–	42½	23	37½–	20½–
	45½	29			42½	26
5 & 6.	41½–	21½–	42½	23	42½	22½–
	43½	27				26
8	45½	28	44½	23½–	44½	23½–
				24		27
10	45	27½	44	23–	44	23–
				23½		26½
12..4	44	26½	43	22½	43	22–
						25½

Standard Wrought Iron Pipe: Mill price in carlots, threaded and coupled, to consumers about $200 a net ton.

	Butt Weld			Lap Weld	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅜	+59½	+90½	1¼	+22	+48
½	+20½	+47½	1½	+15½	+40½
¾	+10½	+36½	2	+ 7½	+31½
1 and			2½-3	+ 5	+27
1¼	+ 4½	+27½	4	List	+21
1½	— 1½	+24	4½-8	+ 2	+22½
2	— 2	+23½	9-12	+12	+32

Boiler Tubes: Net base c.l. prices, dollars per 100', mill; minimum wall thickness, cut lengths 4 to 24", inclusive.

O.D.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	.....	13.39-14.64	13.00	13.00
1¼	13	.....	15.87-17.34	13.21	15.39
1½	13	16.45	17.71-19.35	14.60	17.18
1¾	13	18.71	20.15-22.02	16.60	19.54
2	13	20.96	22.56-24.66	18.60	21.89
2¼	13	23.36	25.16-27.50	20.73	24.40
2¼	12	23.54-25.73	27.70-30.28	22.83	26.88
2½	12	25.79-28.19	30.33-33.15	25.02	29.41
2¾	12	27.33-29.87	32.14-35.13	26.51	31.16
3	12	28.68-31.35	33.76-36.90	27.82	32.74
3¼	11	33.39-36.50	39.29-42.95	32.39	38.11
3½	11	35.85-39.19	42.20-46.13	34.78	40.94
4	10	44.51-48.65	52.35-57.22	43.17	50.78
4½	9	58.99-64.47	69.42-75.88	....	....
5	9	68.28-74.64	80.35-87.82	....	....
6	7	104.82-114.57	123.33-134.81	....	....

Pipe Cast Iron: Class B, 6-in. and over, $82.50-$93.50 per net ton, Birmingham; $87.50, Burlington, N. J.; 4-in. pipe, $5 higher; Class A pipe, $5 a ton over Class B.

Rails, Supplies

Rails: Standard, over 60-lb; $3.20 per 100 lb mill, except: $3.30, Minnequa, Colo.
Light (billet): $3.55 per 100 lb, mill, except: $4.25, Minnequa, Colo.
Light (rail steel): $3.55 per 100 lb, Williamsport, Pa., Huntington, W. Va.
Railroad Supplies: Track bolts, treated: $8.50 per 100 lb, mill. Untreated: $8.25, mill.
Tie Plates: 4.05c mill, except: 4.20c, Pittsburg, Torrance, Calif.; 4.50c, Seattle.
Splice Bars: 4.25c, mill.
Standard Spikes: 5.35c, mill.
Axles: 5.20c, mill.

RAW MATERIAL AND FUEL PRICES

Minimum delivered prices do not include 3 per cent federal tax.

Pig Iron

Per Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa., furnace	$48.00	$48.50	$49.00	$49.50
Newark, N. J., del.	50.5334	51.0334	51.5334	52.0334
Brooklyn, N. Y., del.	....	52.634	53.134	....
Birmingham, furnace	38.88	39.38	....	....
Cincinnati, del.	....	45.43	....	....
Buffalo, furnace	46.00	46.50	47.00	....
Boston, del.	54.92	55.42	55.92	....
Rochester, del.	47.95	48.45	48.95	....
Syracuse, del.	49.39	49.89	50.39	....
§**Chicago,** district furnaces	46.00	46.00-46.50	46.50	47.00
Milwaukee, del.	47.82	47.82-48.32	48.32	48.82
Muskegon, Mich., del.	....	51.28-51.78	51.78	....
Cleveland, furnace	46.00	46.50	46.50	47.00
Akron, del.	48.3002	48.8002	48.8002	49.3002
Lone Star, Tex., furnace	46.00	†46.50	....	....
Gulf ports, del.	50.50	51.00	....	....
Duluth, furnace	....	46.50	46.50	47.00
Erie, Pa., furnace	46.00	46.50	46.50	47.00
Everett, Mass., furnace	....	52.50	53.00	....
Geneva, Utah, furnace	46.00	46.50	....	....
Seattle, Tacoma, Wash., del.	....	54.0578	....	....
Portland, Oreg., del.	....	54.0578	....	....
Los Angeles, San Francisco	53.5578	54.0578	....	....
Granite City, Ill., furnace	47.90	48.40	48.90	....
St. Louis, del.	49.40	49.90	50.40	....
Ironton, Utah, furnace	47.00	47.50	....	....
‡**Neville Island, Pa.,** furnace	46.00	46.50	46.50	47.00
Pittsburgh, del., N.&S. Sides	47.08	47.58	47.58	48.08
Pittsburgh (Carnegie), furnaces	46.00	....	....	47.00
Sharpsville, Pa., furnace	46.00	46.50	46.50	47.00
Steelton, Pa., furnace	48.00	48.50	49.00	49.50
Struthers, O., furnace	46.00	....	....	....
Swedeland, Pa., furnace	48.00	48.50	49.00	49.50
Philadelphia, del.	49.39	49.89	50.39	50.89
Toledo, O., furnace	46.00	46.50	46.50	47.00
Cincinnati, del.	50.8230	51.3230	....	....
Youngstown, O., furnace	46.00	46.50	46.50	47.00
Mansfield, O., del.	50.1022	50.6022	50.6022	51.1022

† Low phosphorus southern grade.

‡ To Neville Island base add: $0.86 for McKees Rocks, Pa.; $1.31 Lawrenceville, Homestead, McKeesport, Monaca; $1.73 Verona; $1.94 Brackenridge; $1.08 for Ambridge and Aliquippa.

§ Includes, in addition to Chicago, South Chicago, Ill., East Chicago, Gary and Indiana Harbor, Ind.

Blast Furnace Silvery Pig Iron

6.00-6.50 per cent Si (base)	$59.50		
6.51-7.00	60.50	9.01- 9.50	65.50
7.01-7.50	61.50	9.51-10.00	66.50
7.51-8.00	62.50	10.01-10.50	67.50
8.01-8.50	63.50	10.51-11.00	68.50
8.51-9.00	64.50	11.01-11.50	69.50

F.o.b. Jackson, O., per gross ton. Buffalo furnace $1.25 higher.

Bessemer Ferrosilicon

Prices same as for blast furnace silvery iron, plus $1 per gross ton.

Electric Furnace Silvery Pig Iron Si 14.01-14.50%, $78.50 furnace, Niagara Falls; $80 open-hearth and foundry grade, Keokuk, Iowa, or Wenatchee, Wash., freight allowed to normal trade area. 12½ lb piglets, $85, Keokuk, Iowa, freight allowed to normal trade area. Add $1 a ton for each additional 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 a ton for 0.45% max. P.

Charcoal Pig Iron

Semi-cold blast, low phosphorous. F.o.b. furnace, Lyles, Tenn....$66 (For higher silicon iron a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Low Phosphorus

Steelton, Pa., Troy, N. Y., $54; Philadelphia, $56.9786 del. Intermediate phosphorus, Central furnace, Cleveland, $51.

Electrodes

(Threaded, with nipples, unboxed)

Diam. (Inches)	Length	Cents per lb, f.o.b. plant
Graphite		
17, 18, 20	60, 72	16.00
8 to 16	48, 60, 72	16.50
7	48, 60	17.75
8	48, 60	19.00
4, 5⅛	40	19.50
3	40	20.50
2½	24, 30	21.00
2	24, 30	23.00
Carbon		
40	100, 110	7.50
35	100, 110	7.50
30	84, 110	7.50
24	72 to 104	7.50
17 to 20	84, 90	7.50
14	60, 72	8.00
10, 12	60	8.25
8	60	8.50

Fluorspar

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $37; less than 60%, $34.

Metallurgical Coke

Price per Net Ton

Beehive Ovens	
Connellsville, furnace	$13.50-15.00
Connellsville, foundry	16.00-17.50
New River, foundry	16.50
Wise county, foundry	15.35
Wise county, furnace	14.60
Oven Foundry Coke	
Kearney, N. J., ovens	$22.00
Everett, Mass., ovens, New England, del.‡	22.70
Chicago, ovens	20.40
Chicago, del.	†21.85
Detroit, del.	24.16
Terre Haute, ovens	20.20
Milwaukee, ovens	21.15
Indianapolis, ovens	19.85
Chicago, del.	23.19
Cincinnati, del.	22.66
Detroit, del.	23.61
Ironton, O., ovens	19.40
Cincinnati, del.	21.63
Painesville, O., ovens	20.90
Buffalo, del.	23.42
Cleveland, del.	22.55
Erie, del.	22.70
Birmingham, ovens	17.70
Philadelphia, ovens	20.45
Swedeland, Pa., ovens	20.40
Portsmouth, O., ovens	19.50
Detroit, ovens	20.65
Detroit, del.	*21.70
Buffalo, del.	22.75
Flint, del.	22.98
Pontiac, del.	21.98
Saginaw, del.	23.30

Includes representative switching charge of: *, $1.05; †, $1.45. ‡Or within $4.03 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens (Price effective as of Aug. 5)

Pure benzol	20.00
Toluol, one degree	19.00-23.50
Industrial xylol	20.50-26.50
Per ton bulk, ovens	
Sulphate of ammonia	$45.00
Per pound, ovens (Effective as of Oct. 1)	
Phenol, 40 (carlots, returnable drums)	13.50
Do., less than carlots	14.25
Do., tank cars	12.50
(Effective as of Oct. 25)	
Naphthalene flakes, balls, bbl to jobbers, "household use"	13.75

Refractories

(Prices per 1000 brick, f.o.b. plant)

Fire Clay Brick

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., $100. Hard-fired, $135 at above points.

High-heat Duty: Salina, Pa., $85; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $80.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $74.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., Ottawa, Ill., $66.

Ladle Brick

Dry Press: $55, Freeport, Merill Station, Clearfield, Pa.; Chester, New Cumberland, W. Va.; Irondale, Wellsville, O.

Wire Cut: $53, Chester, New Cumberland, W. Va.; Wellsville, O.

Malleable Bung Brick

St. Louis, Mo., Olive Hill, Ky., Ottawa, Ill., $90; Beach Creek, Pa., $80.

Silica Brick

Mt. Union, Claysburg, or Sproul, Pa., Ensley, Ala., $80; Hays, Pa., $85; Joliet or Rockdale, Ill., E. Chicago, Ind., $89; Lehi, Utah, Los Angeles, $95.

Eastern Silica Coke Oven Shapes: Claysburg, Mt. Union, Sproul, Pa., Birmingham, $80.

Illinois Silica Coke Oven Shapes: Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $81.

Basic Brick

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $66; Chemical-bonded chrome brick, $69; magnesite brick, $91; chemical-bonded magnesite, $80.

Magnesite

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅝" grains; Bulk, $30.50-31.00; single paper bags, $35.00-35.50.

Dolomite

(Base prices per net ton)

Domestic, dead-burned bulk: Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Narlo, Millersville, Martin, Gibsonburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Bonne Terre, Mo., $12.45.

Ores ....

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural)

Lower Lake Ports

(Any increase or decrease in R.R. freight rates, dock handling charges and taxes thereon effective after Dec. 31, 1948, are for buyer's account.)

Old range bessemer	$7.60
Old range nonbessemer	7.45
Mesabi bessemer	7.35
Mesabi nonbessemer	7.20
High phosphorus	7.20

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56.62% concentrates, contract	16.00

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
Brazil iron ore, 68-69%	19.50

Tungsten Ore

Wolframite and scheelite per short ton unit, duty paid	$26–$28

Manganese Ore

Long term contracts, involving large tonnages, prices are nominal; nearby, 48%, duty paid, 81.8c-83.8c per long ton unit, c.i.f. United States ports; prices on lower grades adjusted to manganese content and impurities.

Chrome Ore

Gross ton f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S.C., plus ocean freight differential for delivery to Portland, Oreg., and/or Tacoma, Wash. (S S paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African	
48% 2.8:1	37.50
48% 3:1	39.00
48% no ratio	31.00
South African (Transvaal)	
44% no ratio	$25.50-$26.00
45% no ratio	26.50
48% no ratio	29.00-30.00
50% no ratio	29.50-30.50
Brazilian—nominal	
44% 2.5:1 lump	$33.65
Rhodesian	
45% no ratio	$27-$27.50
48% no ratio	30.00
48% 3:1 lump	39.00
Domestic (seller's nearest rail)	
48% 3:1	$39.00

Molybdenum

Sulphide conc., lb, Mo., cont., Mines	$0.90

WAREHOUSE STEEL PRICES

Prices, cents per pound, for delivery within switching limits, subject to extras

	SHEETS			STRIP		BARS				PLATES	
	H-R 10 Ga.	C-R 17 Ga.	Gal. *10 Ga.	†H-R	†C-R	H-R Rds. ⅝" to 3"	C-F Rds. ½" & up	H-R Alloy **4140	Standard Structural Shapes	Carbon ⅜"-¾"	Floor ¾" & Thicker
New York (city)	6.00	6.51‡	7.20	5.82	...	5.77	6.56	8.68	5.53	5.90	7.36
New York (c'try)	5.80	6.31‡	7.00	5.62	...	5.57	6.36	8.48	5.33	5.70	7.16
Boston (city)	6.10	6.70	7.21	5.80	...	5.67	6.42	8.72	5.57	5.95	7.40
Boston (c'try)	5.95	6.55	7.06	5.65	...	5.52	6.27	8.57	5.42	5.80	7.25
Phila. (city)	5.72	6.64	7.33	5.60	...	5.55	6.34	8.40	5.25	5.53	6.74
Phila. (c'try)	5.57	6.59	7.18	5.45	...	5.40	6.19	8.25	5.10	5.38	6.59
Balt. (city)	5.46†	6.36	7.26	5.52	...	5.57	6.31	...	5.51	5.71	7.16
Balt. (c'try)	5.31†	6.21	7.11	5.37	...	5.42	6.16	...	5.36	5.56	7.01
Norfolk, Va.	5.80	...	...	...	...	6.05	7.05	...	6.05	6.05	7.55
Wash. (w'hse)	5.84-6.00	...	...	5.90	...	5.91-5.95	6.61	...	5.85-5.89	6.05-6.09	7.50-7.54
Buffalo (del.)	5.00	6.05	7.85	5.49	6.50	5.20	6.05	10.13	5.25	5.50	7.06
Buffalo (w'hse)	4.85	5.90	7.70	5.34	6.35	5.05	5.90	9.98	5.10	5.35	6.91
Pitts. (w'hse)	4.85†	5.75[8]†	6.95	5.00	6.00	4.90	5.65	9.60	4.90	5.05-5.10	6.55
Detroit (w'hse)	5.42§	6.22[8]†	7.53	5.42	6.42-6.73	5.48	6.15	8.44-8.59	5.48	5.67	7.02
Cleveland (del.)	5.00†	5.90‡	6.80-6.96	5.15-5.18	6.15	5.15-5.16	5.85	8.24-8.40	5.15-5.16	5.35-5.36	6.80-6.81
Cleve. (w'hse)	4.85†	5.75‡	6.65-6.81	5.00-5.03	6.00	5.00-5.01	5.70	8.24-8.25	5.00-5.01	5.20-5.21	6.65-6.66
Cincin. (w'hse)	5.26	5.94	6.98	5.38	6.10	5.43	6.18	...	5.43	5.63	7.02
Chicago (city)	5.00-5.20	5.90[8]‡	7.10	5.00	6.67-6.83	5.05	5.85	8.25[9]	5.05	5.25	6.70
Chicago (w'hse)	4.85-5.05	5.75[8]‡	6.95	4.85	6.52-6.68	4.90	5.70	8.10[9]	4.90	5.10	6.55
Milwaukee (city)	5.18-5.38	6.08[8]‡	7.28	5.18	6.82-7.01	5.23	6.03	8.43[9]	5.23	5.43	6.88
St. Louis (del.)	5.37§	6.27[8]‡	7.44	5.34	6.64	5.39	6.19[12]	6.64	5.39	5.59	7.04
St. L. (w'hse)	5.22§	6.12[8]‡	7.29	5.19	6.49	5.24	6.04[12]	6.49	5.24	5.44	6.89
Birm'ham (city)	5.20§	...	6.60	5.20	...	5.15	6.83	...	5.15	5.40	7.73[20]
Birm'ham (c'try)	5.05§	...	6.45	5.05	...	5.00	6.68	...	5.00	5.25	7.58[20]
Omaha, Nebr.	6.13	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Los Ang. (city)	6.60§	8.05	8.20†	6.80	9.50	6.25	8.20	...	6.10	6.30	8.20
L. A. (w'hse)	6.45§	7.90	8.05†	6.65	9.35	6.10	8.05	...	5.95	6.15	8.05
San Francisco	6.15[21]§	7.50†	8.10	6.75[21]	8.25[18]	5.90[21]	7.55	10.85[3]	5.90	6.35	8.10
Seattle-Tacoma	6.70[17]	9.15[3]‡	8.80	6.70[17]	...	6.20[17]	8.15[1]	10.35	6.30[17]	6.35[17]	8.40[17]

Base Quantities: 400 to 1999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold finished bars, 1000 lb and over; galvanized sheets, 450 to 1499 lb; [3]—1000 to 4999 lb; [8]—450 to 1499 lb; [9]—400 to 1499 lb; [12]—1000 to 1999 lb; [17]—300 to 9999 lb; [18]—1500 to 1999 lb; [20]—400 to 3999 lb; [21]—400 lb and over; [22]—500 to 1499 lb.

* Includes gage and coating extra, except Birmingham (coating extra excluded); † base price, does not include gage extras; ‡ 15 gage; § 18 gage and heavier; ** as annealed; †† add 0.40 for sizes not rolled in Birmingham; ‡‡ top level of quoted range is nominal.

PRICES OF LEADING FERROALLOY PRODUCTS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si) Carlot per gross ton, $65, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $172 per gross ton of alloy, c.l., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces; $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18%, and Si 53-59%). Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots, 2" x D, $1.40 per lb of contained Ti; less ton $1.45, (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.). Ton lot $1.28, less ton $1.35. F.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract, $160 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%). Contract, $175 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

VANADIUM ALLOYS

Ferrovanadium: Open-Hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.), $3.10.

Grainal: Vanadium Grainal No. 1, 93c; No. 6, 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots, $1.20 per lb of contained V_2O_5, freight allowed. Spot, add 5c.

TUNGSTEN ALLOYS

Ferrotungsten: (W 70-80%). Contract, 10,000 lb W. or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W., $3.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $6.25 per lb contained B, f.o.b. Philo, O., freight not exceeding St. Louis rate allowed.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 0.90 to 1.15%). Net ton to carload, 8c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Mn 5% max., Si 8% max, C 0.5% max.). Contract, ton lot, 2" x D, $2.90 per lb of contained Cb, less ton $2.95. Delivered. Spot, add 25c.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). Carload, 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, Boron 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.25c, less ton 18.5. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 16.50-17.00c per lb of alloy; ton lots 17.90-18.00c; less ton lots 19.40-19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Packed, lump, carload 11c, ton lots 11.25c, smaller lots 11.75c per lb alloy; freight not exceeding St. Louis rate allowed.

Ferrophosphorus (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base): Gross tons per carload, f.o.b. sellers' works, Mt. Pleasant, or Siglo, Tenn.; $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.10.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.

For prices of other ferroalloy products please refer to May 9 issue, page 155.

Copper and Zinc Prices Decline

Buying interest picks up following drop to 18.00c for electrolytic copper and 12.00c for prime western zinc. Lead demand continues unusually light in split market

New York— Consumer buying interest in copper and zinc increased markedly last week, although actual sales were not heavy, indicating that a halt to the recent sharp downtrend in prices may be at hand. Demand for lead continued disappointingly light, however, despite offerings from some quarters at 13.85c, St. Louis, a drop of 1 cent from the previous week's level.

Since the first of the year copper had dropped 5½ cents a pound; lead, 7½ cents; zinc, 5½ cents. However, the current quotations on these metals are still 2¾-cent above OPA wartime levels on zinc, 3⅝ cents on copper and 5¾ cents on lead.

The situation prevailing in the lead market is about the same as prevailed after World War I with the exception that the government is not dumping war supplies as it did roughly 30 years ago, Clinton H. Crane, chairman, St. Joseph Lead Co., told stockholders at their meeting last week. He said that consumers in both periods bought more than they really needed.

In the current situation, business began leveling off around October or November of last year, but consumers bid the price of lead beyond all sense and, to guard against shortages, they continued to buy until early February of this year, he said. After that, buying abruptly ceased and manufacturers started to unload their surpluses. American users bought 350,000 tons of foreign lead last year, or much more than they needed, paying as much as 26.00c a pound for this metal.

Mr. Crane said that the basic economy of the country is good, although prices for metals will be below those of last year. "I think it will take a little time for the readjustment to be completed but I do not think it will take a full year this time to get over the decline as compared to about one and one-half years required after the first world war," Mr. Crane said.

He pointed out that when World War I ended buying ceased and the government dumped what lead it had bought. That didn't happen after the last war. He expressed the opinion that because of the increased cost and the lower purchasing power of the dollar, lead prices should be about three times prewar levels.

Lead buying now is on a hand-to-mouth basis, Mr. Crane stated. He cited the storage battery industry as an example of what has happened. The battery makers produced in two years more units than all the trucks and passenger cars estimated on the roads in the United States. He noted that the average life of a battery is around two years. There were roughly 48 million replacement storage batteries shipped during 1947 and 1948 while the estimated number of trucks and passenger cars on the road is 40 million.

Even so, lead still is in shorter supply than either copper or zinc, Mr. Crane said. The United States can produce only 60 per cent of what it did 20 years ago. He said that in his opinion Canada's lead production has passed its peak; Australia, a big lead producer, has labor and other difficulties to surmount; Mexican lead output is on the downgrade; and Argentine output is not enough to supply that nation's needs. When European nations are in a position to buy lead, they are going to need more of this metal than is produced in the United States, Mr. Crane said.

Copper—Electrolytic copper prices were reduced to 18.00c a pound on May 6 by custom smelters. Subsequently, mine producers lowered prices to 18.50c a pound but, due to the absence of active buying at the latter level, the market was quotable at a flat 18-cent level.

Buying picked up slightly last week, indicating that consumers have reduced their inventories and that many of them are now ready to replenish them, or at least to purchase sufficient tonnage to cover present consumption.

Mill Products—Leading brass mills reduced their prices last week to levels based on 18.00c for copper and 12.00c for zinc. Practically all copper and brass products were reduced 1-cent a pound, while purchase prices for scrap were reduced ⅝-cent with the exception of cupronickel and 15 per cent and 18 per cent nickel silver scrap which were reduced ½-cent. Copper wire and cable producers also lowered their prices on bare, weatherproof and magnet wire.

Lead—The price of lead was reduced last week to 13.85c, East St. Louis, by a leading custom smelter, but St. Joseph Lead Co. announced that it is not changing its price to meet that reduction. The company said that it intends to hold its price at 14.80c a pound, St. Louis, and 15.00c, New York, for an unstated period.

Apparent low bidder on 7934 long tons of lead to be delivered, docks, Yokohama, Japan, is Continental Ore Co., New York, with the actual contract letting by the Chicago Procurement Office, Corps of Engineers, U. S. Army, awaiting approval from Washington. Continental's bid, one of 20 received from both domestic and foreign interests, was of $321.90 per ton for 99.95 per cent pure lead ingots or $319.10 for 99.9 per cent pure. Present indications are that the latter item for the entire tonnage will be accepted.

Zinc—Zinc prices declined to the 12-cent level last week, attracting somewhat better buying interest. Deliveries of zinc to domestic consumers dropped 15,426 tons, or 30 per cent, during April to a total of 35,955 tons, according to the American Zinc Institute. During the first four months of this year shipments totaled 210,777 tons compared with 259,901 tons in the like 1948 period. Export and drawback shipments totaled 8438 tons while 8757 tons were transferred to the governments' permanent stockpile. Total shipments, therefore, amounted to 53,150 tons against 71,017 tons in March.

Smelter production rose to a new daily peak of 2531 tons, although production for the month was lower due to the fewer working days at 75,941 tons compared with 78,121 tons in March. As a result of the sharp drop in deliveries, stocks of all grades of zinc at the end of April jumped 22,800 tons to a total of 50,995 tons as of Apr. 30.

Unfilled orders on the books of producers totaled 65,713 tons as of Apr. 30 compared with 79,722 tons on Mar. 31.

Tin—Consumer buying interest in Chinese tin has been light following the announcement on Apr. 28 that consumers would be permitted to buy low grade tin (assaying 99.65 per cent or less) against their allocations. That grade of metal is quoted from 83.00c to 87.00c for May-June delivery, New York. For July-August, 80.00c to 85.00c is considered the market.

Following Senate approval, the bill to authorize the Reconstruction Finance Corp. to sell low-grade tin concentrates to private industry "at no greater loss than it would cost the RFC to process it" now is before the House. The bill is aimed at encouraging tin smelting by private interests, and its enactment would enable Vulcan Detinning Co., Sewaren, N. J., to get a new extraction process into operation.

Copper Stabilization Near

Bridgeport, Conn.—Austin R. Zender, vice president in charge of sales, Bridgeport Brass Co., has sent a letter to the company's district managers and salesmen discussing the current situation in copper. The letter reads in part as follows:

"It is a well-known fact that most users of brass mill products had excessive inventories on hand. With their conservative buying in the past few months, however, a great number of these inventories should now be fairly liquidated.

"Because of the sudden decline in prices on lead, zinc and many other commodities, it was the general opinion that the price of copper would also be reduced. The question in customers' minds, and no doubt in your mind as well as in ours, has been what the final level would be.

"While it is impossible to make such a forecast at this time, the present price of 18.50c a pound, or approximately that figure, might be the price at which copper will be stabilized. This opinion is based on:

"1. That the demand for copper must increase from its present most alarmingly low level;

"2. That the Government will most likely continue its stock-piling program;

"3. That some of the high cost producing mines may shut down because of their inability to operate profitably;

"4. That the supply of copper from other mines might be reduced from present peak level because of curtailment in output if the demand does not increase."

NONFERROUS METAL PRICES

(Cents per pound, carlots, except as otherwise noted)

Copper: Electrolytic 18.00c, Conn. Valley; Lake, Nom., Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 15.75-17.00c; 88-10-2 (No. 215) 25.50c; 80-10-10 (No. 305) 21.75c; No. 1 yellow (No. 405) 13.50-14.50c.

Zinc: Prime western 12.00c, brass special 12.25c, intermediate 12.50c, East St. Louis; high grade 13.00c, delivered.

Lead: Common 13.85-14.80c; chemical, 14.90c; corroding, 13.95-14.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.00c, pigs 16.00c. Base prices for 10,000 lb and over, f.o.b. shipping point.

Secondary Aluminum: Piston alloy (6-6 type) 17.25-17.50; No. 12 foundry alloy (No. 2 grade) 16.50-17.00; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 17.00c; grade 2, 16.00c; grade 3, 15.00c; grade 4, 14.00c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over, 20.50c, f.o.b. Freeport, Tex.

Tin: Grade A, 99.8% or higher (including Straits) $1.03; grade B, 99.8% or higher, not meeting specifications for grade A, with 0.05% max. arsenic, $1.028; grade C, 99.65-99.79%, incl., $1.024; 99.5-99.649% $1.024, grade F, 98-98.999% $1.015 for tin content. Prices are ex-dock, New York, in 5-ton lots.

Antimony: American 99-99.8% and over but not meeting specifications below, 38.50c; 99.8% and over (arsenic 0.05% max.; other impurities, 0.1% max.) 39.00c, f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 40.00c; 25-lb pigs, 42.50c; "XX" nickel shot, 43.50c; "F" nickel shot or ingots, for addition to cast iron, 40.50c. Prices include import duty.

Mercury: Open market, spot, New York $83-$86 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $24.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, $2 del.; special or patented shapes, $2.15.

Cobalt: 97-98%, $1.80 per lb for 550 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 71.50c per ounce.

Platinum: $72-$75 per ounce.

Palladium: $24 per troy ounce.

Iridium: $100-$110 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 31.68; yellow brass 29.10; commercial bronze, 95%, 31.73; 90%, 31.38; red brass, 85%, 30.51; 80%, 30.17; best quality, 29.84; nickel silver, 18%, 42.42; phosphor-bronze, grade A, 5%, 50.82.

Rods: Copper, hot rolled 27.53; cold drawn 28.78; yellow brass, free cutting, 23.69; commercial bronze, 95% 31.42; 90% 31.07; red brass 85% 30.20; 80% 29.86.

Seamless Tubing: Copper 31.72; yellow brass 32.11; commercial bronze 90% 34.04; red brass 85% 33.42; 80% 33.08.

Wire: Yellow brass 29.39; commercial bronze, 95% 32.02; 90% 31.67; red brass, 85% 30.80; 80% 30.46; best quality brass 30.13.

Copper Wire: Bare soft, f.o.b., eastern mills, 100,000 lb lots, 24.30, l.c. 24.42½c, l.c.l. 24.92½c; weatherproof, f.o.b. eastern mills, 100,000 lb lots, 25.97½, c.l. 26.10, l.c.l. 26.60; magnet, delivered, c.l. 28.50, 15,000 lb or more 28.75, l.c.l. 29.25.

ALUMINUM

Sheets and Circles: 2s and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	26.9	...	...
0.135-0.096	12-48	27.4	...	...
0.095-0.077	12-48	27.9	26.0	29.6
0.076-0.068	12-48	28.5	26.2	29.8
0.067-0.061	12-48	28.5	26.2	29.8
0.060-0.048	12-48	28.7	26.4	30.1
0.047-0.038	12-48	29.1	26.6	30.4
0.037-0.030	12-48	29.5	27.0	30.9
0.029-0.024	12-48	29.9	27.3	31.3
0.023-0.019	12-36	30.5	27.7	31.8
0.018-0.017	12-36	31.1	28.3	32.6
0.016-0.015	12-36	31.8	28.9	33.5
0.014	12-24	32.7	29.7	34.6
0.013-0.012	12-24	33.6	30.4	35.5
0.011	12-24	34.6	31.3	36.7
0.010-0.0095	12-24	35.6	32.3	38.0
0.009-0.0085	12-20	36.8	33.4	39.5
0.008-0.0075	12-20	38.1	34.6	41.1
0.007	12-18	39.5	35.9	42.9
0.006	12-18	41.0	37.2	47.0

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	—Hexagonal— 17S-T4
0.125	48.0	...	...
0.156-0.203	41.0	...	...
0.219-0.313	38.0	...	...
0.344	37.0	...	47.0
0.375	36.5	45.5	44.0
0.406	36.5	...	...
0.438	36.5	45.5	44.0
0.469	36.5	...	...
0.500	36.5	45.5	44.0
0.531	36.5	...	...
0.563	36.5	...	41.5
0.594	36.5	...	...
0.625	36.5	43.0	41.5
0.656	36.5	...	...
0.688	36.5	...	41.5
0.750-1.000	35.5	40.5	39.0
1.063	35.5	...	37.5
1.125-1.500	34.5	39.0	37.5
1.563	34.5	...	37.5
1.625	33.5	...	36.5
1.688-2.000	33.5	...	...
2.125-2.500	32.5	...	...
2.625-3.375	31.5	...	...

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, $19.00 per cwt; add 50c per cwt, 10 sq ft to 140 sq ft. Pipe: Full coils, $19.00 per cwt. Traps and Bends: List price plus 50%.

ZINC

Sheets, 17.00c, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 16.25c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 15.25c; over 12-in., 16.25c.

NICKEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled, 60.00c. Strip, cold-rolled 66.00c. Rods and shapes, 56.00c. Plates 58.00c. Seamless tubes, 89.00c.

MONEL

(Base prices, f.o.b. mill.)

Sheets, cold-rolled 47.00c; Strip, cold-rolled, 50.00c. Rods and shapes, 45.00c. Plates, 46.00c, Seamless tubes, 80.00c, Shot and blocks, 40.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.312 in. in diameter, less than 25 lb, 52.00-56.00c; 25 to 99 lb, 42.00-46.00c; 100 lb to 4000 lb, 35.00-36.00c.

Plating Materials

Chromic Acid: 99.9%, flake, f.o.b. Philadelphia, carloads, 26.00c; 5 tons and over 26.50c; 1 to 5 tons, 27.00c; less than 1 ton, 27.50c.

Copper Anodes: Base, 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat untrimmed 31.84c; oval 31.34; cast 29.87c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 48.00c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,900 lb, 17.00c, f.o.b. Niagara Falls, N. Y.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 250 lb, 26.25c; over 250 lb, 25.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 56.00c; 10,000 to 30,000 lb, 57.00c; 3000 to 10,000 lb, 58.00c; 500 to 3000 lb, 59.00c; 100 to 500 lb, 61.00c; under 10 lb, 64.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 26.50c; 400-lb bbl, 24.50c, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, 119.00c; 500 to 999 lb, 119.50c; 200 to 499 lb, 120.00c; less than 200 lb, 121.50c; ball, 1000 lb and over, 121.25c; 500 to 999 lb, 121.75c; 200 to 499 lb, 122.25c; less than 200 lb, 123.75c f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers 71.8c; 100 or 300 lb drums only, 100 to 500 lb, 63.6c; 600 to 1900 lb, 61.2c; 2000 to 9900 lb, 59.4c, f.o.b. Sewaren, N. J. On 100 or 350 lb drums only, 100 to 600 lb, 63.3c; 700 to 1900 lb, 60.9c; 2000 to 9900 lb, 59.1c; 10,000 lb and over, 58.00c, f.o.b. Carteret, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100-lb drums 42.50c, f.o.b. Cleveland; 43.00c, Detroit; 42.00c, Philadelphia.

Stannous Sulphate: Less than 2000 lb in 100 lb kegs, 100.00c, in 400 lb bbl, 99.00c; more than 2000 lb, in 100 lb kegs, 99.00c, in 400 lb bbl, 98.00c, f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, 97.00c; 100 lb kegs, 98.00c, f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	15.500	15.500	14.625
Yellow brass	13.250	13.000	12.500
Commercial Bronze			
95%	14.625	14.375	13.875
90%	14.500	14.250	13.750
Red Brass			
85%	14.375	14.125	13.625
80%	14.250	14.000	13.500
Best Quality (71-80%)	14.125	13.875	13.375
Muntz Metal	12.625	12.375	11.875
Nickel, silver, 10%	15.125	14.875	7.5625
Phos. bronze, A	17.375	17.125	16.125
Naval brass	13.125	12.875	12.375
Manganese bronze	13.125	12.875	12.250

BRASS INGOT MAKERS BUYING PRICES

(Cents per pound, f.o.b. shipping point, carload lots)

No. 1 copper 13.00, No. 2 copper 12.00, light copper 11.00, composition red brass 10.00, radiators 7.50-7.75, heavy yellow brass 7.50.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 13.00, No. 2 copper 12.00, light copper 11.00, refinery brass (60% copper), per dry copper content 11.00.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and Brass: Heavy copper and wire No. 1 11.50-11.75, No. 2 10.50-10.75, light copper 9.50-9.75, No. 1 composition red brass 8.25-8.50, No. 1 composition turnings 7.75-8.00, mixed brass turnings 5.75-6.00, new brass clippings 10.50-11.00; No. 1 brass rod turnings 7.50-7.75, light brass 5.00-5.50, heavy yellow brass 6.00-6.25, new brass rod ends 7.50-7.75, auto radiators, unsweated 6.00-6.25, cocks and faucets 7.25-7.50, brass pipe 7.75-8.00.

Lead: Heavy 8.00-8.50, battery plates 4.00-4.50, linotype and stereotype 10.50-11.00, electrotype 8.50-9.00, mixed babbitt 11.50-12.00, solder joints, 11.50-12.00.

Zinc: Old zinc 4.50-500, new die cast scrap 4.50-5.00, old die cast scrap 2.50-3.00.

Tin: No. 1 pewter 52.00-54.00, block tin pipe 70.00-72.00, No. 1 babbitt 40.00-42.00, siphon tops 44.00-46.00.

Aluminum: Clippings 2S 10.00-10.50, old sheets 6.00-6.50, crankcase 6.00-6.50, borings and turnings 3.00-3.50, pistons, free of struts, 6.00-6.50.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Apr. Avg.	21.774	15.017	14.085	103.000	17.000	38.500	40.000	71.500
Mar. Avg.	23.486	18.825	17.056	103.000	17.000	38.500	40.000	71.500
May 2-5	18.50	14.80–14.85	12.50	103.00	17.00	38.50	40.00	71.50
May 6-7	18.50	13.85–14.80	12.50	103.00	17.00	38.50	40.00	71.50
May 9-12	18.00	13.85–14.80	12.00	103.00	17.00	38.50	40.00	71.50

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. E. St. Louis; Zinc, prime western, del. St. Louis; Tin, Straits, del. New York; Aluminum, primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery, unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Prices are dollars per gross ton, including broker's commission, delivered at consumer's plant except where noted.

PITTSBURGH

No. 1 Heavy Melt	$23.00
No. 2 Heavy Melt	22.00†
No. 1 Busheling	23.00
No. 1 Bundles	23.00
No. 2 Bundles	19.50-20.50
No. 3 Bundles	18.50-19.50
Heavy Turnings	18.00-19.00
Machine Shop Turnings	14.50-15.50‡
Mixed Borings, Turnings	14.50-15.50‡
Short Shovel Turnings	19.00-19.50
Cast Iron Borings	18.50-19.50
Bar Crops and Plate	25.00-25.50
Low Phos. Steel	25.00-25.50

Cast Iron Grades†

No. 1 Cupola Cast	23.00-23.50
No. 1 Machinery Cast	28.00-29.00
Charging Box Cast	25.50-26.50
Heavy Breakable Cast	24.00-25.00
Brake Shoe	25.00-26.00

Railroad Scrap

No. 1 R.R. Heavy Melt	25.50-26.00
Axles	33.00-34.00
Rails, Random Lengths	28.00-29.00*
Rails, 2 ft and under	33.00-34.00
Rails, 18 in. and under	35.00-36.00
Railroad Specialties	28.00-28.50
Angles, Splice Bars	35.00-36.00

*Brokers' buying prices.
†Nominal.
‡Crushers buying prices.

CLEVELAND

Heavy Melt. Steel	$18.00-19.00
No. 1 Busheling	18.00-19.00
No. 2 Bundles	16.00-17.00
Machine Shop Turnings	12.00†
Mixed Borings, Turnings	17.50-18.00
Short Shovel Turnings	17.50-18.00
Cast Iron Borings	17.50-18.00
Bar Crops and Plate	22.00†
Punchings & Plate Scrap	22.00†
Cut Structurals	23.00†

Cast Iron Grades†

No. 1 Cupola	29.00-30.00
Charging Box Cast	27.00-28.00
Stove Plate	23.00-24.00
Heavy Breakable Cast	21.00-22.00
Unstripped Motor Blocks	21.00-22.00
Malleable	23.00-24.00
Brake Shoes	22.00-22.50
Clean Auto Cast	32.00-32.50
No. 1 Wheels	27.00-28.00
Burnt Cast	20.00-21.00

Railroad Scrap

No. 1 R.R. Heavy Melt	24.00-25.00
R.R. Malleable	23.00-24.00†
Rails, 3 ft and under	32.00-33.00
Rails, Random Lengths	26.00-27.00
Cast Steel	28.00
Railroad Specialties	28.00
Uncut Tires	24.00
Angles, Splice Bars	29.00-30.00

† Nominal.

VALLEY

Heavy Melt. Steel	$22.00†
No. 1 Bundles	22.00†
No. 2 Bundles	19.00†
Machine Shop Turnings	13.50-14.00†
Short Shovel Turnings	18.50-19.00†
Cast Iron Borings	18.50-19.00†
Low Phos.	24.50-25.00†

Railroad Scrap

No. 1 R.R. Heavy Melt.	25.00-26.00

† Nominal.

MANSFIELD

Machine Shop Turnings	$13.50-14.00†
Short Shovel Turnings	17.50-18.00†

† Nominal.

CINCINNATI

No. 1 Heavy Melt. Steel	$21.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Busheling	20.00
Nos. 1 & 2 Bundles	18.00
Machine Shop Turnings	10.00
Mixed Borings, Turnings	10.00
Short Shovel Turnings	10.00
Cast Iron Borings	11.00

Cast Iron Grades

No. 1 Cupola Cast	28.00
Charging Box Cast	22.00
Heavy Breakable Cast	20.00
Stove Plate	17.00
Unstripped Motor Blocks	16.00
Brake Shoes	17.00
Clean Auto Cast	28.00
Drop Broken Cast	31.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	21.00
R.R. Malleable	20.00
Rails, Rerolling	25.00
Rails, Random Lengths	22.00
Rails, 18 in. and under	33.50

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 1 Bundles	$15.50-16.00
No. 2 Bundles	12.50-13.00
No. 2 Heavy Melt. Steel	13.00-13.50
No. 1 Busheling	15.50-16.00
Machine Shop Turnings	11.00-12.00
Mixed Borings, Turnings	11.00-12.00
Short Shovel Turnings	12.00-13.00
Cast Iron Borings	13.00-14.00
Punchings & Plate Scrap	15.50-16.00

Cast Iron Grades

No. 1 Cupola Cast	22.00-24.00
Heavy Breakable Cast	17.00-19.00
Clean Auto Cast	22.00-24.00

BUFFALO

No. 1 Heavy Melt. Steel	$23.00-23.50
No. 2 Heavy Melt. Steel	19.50-20.00
No. 1 Bundles	19.50-20.00
No. 1 Bushelings	19.50-20.00
No. 2 Bundles	17.50-18.00
Machine Shop Turnings	13.00-13.50
Mixed Borings, Turnings	15.75-16.00
Cast Iron Borings	15.75-16.00
Short Shovel Turnings	16.75-17.00
Low Phos.	24.00-24.50

Cast Iron Grades

Mixed Yard Cast	27.00-28.00
Heavy Breakable	25.00-26.00
Malleable	23.00-24.00
Clean Auto Cast	31.00-32.00

Railroad Scrap

Rails 3 ft. and under	33.00-34.00
Scrap rails	28.00-29.00
Rail specialties	28.50-29.50

PHILADELPHIA

No. 1 Heavy Melt. Steel	$22.50-23.00
No. 2 Heavy Melt. Steel	19.50-20.00
No. 1 Busheling	19.50-20.00
No. 1 Bundles	22.50-23.00
No. 2 Bundles	17.50-18.00
Machine Shop Turnings	12.00-13.00
Mixed Borings, Turnings	11.00-12.00
Short Shovel Turnings	16.00
Bar Crop and Plate	25.00-26.00
Punchings & Plate Scrap	25.00-26.00
Cut Structurals	24.00-25.00
Elec. Furnace Bundles	22.50-23.00
Heavy Turnings	21.00-22.00
No. 1 Chemical Borings	Nom.

Cast Iron Grades

No. 1 Cupola Cast	27.00
No. 1 Machinery Cast	29.00-30.00
Charging Box Cast	27.00-28.00
Heavy Breakable Cast	27.00-28.00
Unstripped Motor Blocks	24.50
Clean Auto Cast	29.00-30.00
No. 1 Wheels	29.00-30.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	$16.00-17.00
No. 2 Heavy Melt. Steel	14.00-14.50
No. 1 Busheling	14.00-14.50
No. 1 Bundles	16.00-17.00
No. 2 Bundles	14.50
No. 3 Bundles	nominal
Machine Shop Turnings	5.00-7.00
Mixed Borings, Turnings	5.00-6.00
Short Shovel Turnings	8.00-9.00
Punchings & Plate Scrap	16.50-17.50
Cut Structurals	nominal
Elec. Furnace Bundles	16.50-17.50

Cast Iron Grades

No. 1 Cupola Cast	20.00-21.00
No. 1 Machinery	21.00-22.00
Charging Box Cast	18.00-18.50
Heavy Breakable	18.00-18.50
Unstripped Motor Blocks	nom.
Malleable	nom.

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$15.00-16.00
No. 2 Heavy Melt. Steel	12.50-13.50
No. 1 Bundles	15.00-15.50
No. 1 Busheling	11.00-12.00
Machine Shop Turnings	6.00-7.00
Mixed Borings, Turnings	6.00-7.00
Short Shovel Turnings	10.00-11.00
Bar Crops and Plate	18.00-19.00
Punchings & Plate Scrap	18.00-19.00
Chemical Borings	12.00-13.00

Cast Iron Grades

No. 1 Cupola Cast	25.00-26.00
Mixed Cast	22.00-24.00
Heavy Breakable Cast	18.00-19.00
Stove Plate	21.00-22.00
Unstripped Motor Blocks	18.00-20.00

CHICAGO

No. 1 Heavy Melt. Steel	$20.00-22.00
No. 2 Heavy Melt. Steel	19.50-21.00
No. 1 Bundles	20.00-22.00
No. 2 Bundles	18.00-20.00
No. 3 Bundles	17.00-18.00*
Machine Shop Turnings	11.00-12.00
Mixed Borings, Turnings	10.00-11.00
Short Shovel Turnings	15.00-16.00
Cast Iron Borings	13.00-14.00
Bar Crops and Plate	23.00-24.00
Punchings	23.00-24.00
Elec. Furnace Bundles	22.00-23.00
Heavy Turnings	20.00-21.00
Cut Structurals	23.00-24.00

Cast Iron Grades*

No. 1 Cupola Cast	27.00-28.00
Clean Auto Cast	27.00-28.00
No. 1 Wheels	27.00-28.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00-24.00†
Malleable	24.00-25.00*
Rails, Rerolling	27.50-28.00
Rails, Random Length	23.00-24.00
Rails, 2 ft. and under.	28.00-29.00
Rails, 18 in. and under	29.00-30.00
Railroad Specialties	24.00-25.00
Angles, Splice Bars	24.00-25.00

* Nominal. † Allocated material.

ST. LOUIS

No. 1 Heavy Melt. Steel	$21.00-22.00
No. 2 Heavy Melt. Steel	19.00-20.00
Machine Shop Turnings	13.00-14.00
Short Shovel Turnings	13.00-14.00

Cast Iron Grades

No. 1 Cupola Cast	26.00-28.00
Charging Box Cast	20.00-22.00
Heavy Breakable Cast	19.00-21.00
Brake Shoes	22.00-23.00
Clean Auto Cast	28.00-29.00
Burnt Cast	22.00-23.00

Railroad Scrap

R.R. Malleable	21.00-23.00
Rails, Rerolling	25.00-26.00
Rails, Random Lengths	21.00-22.00
Rails, 3 ft. and under.	27.00-28.00
Uncut Tires	23.00-24.00
Angles, Splice Bars	26.00-27.00

BIRMINGHAM

No. 1 Heavy Melt. Steel	$22.00
No. 2 Heavy Melt. Steel	22.00
No. 2 Bundles	20.00
Long Turnings	20.00
Short Shovel Turnings	19.00
Cast Iron Borings	18.00
Bar Crops and Plate	25.00-26.00
Cut Structurals	25.00-26.00

Cast Iron Grades

No. 1 Cupola Cast	33.00-34.00
Stove Plate	30.00-31.00
No. 1 Wheels	30.00-31.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	24.00
R.R. Malleable	nominal
Rails, Rerolling	30.00-32.00
Rails, 3 ft. and under.	31.00-32.00
Angles and Splice Bars	31.00-32.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	18.00
Nos. 1 & 2 Bundles	16.00
Machine Shop Turnings	12.00

Cast Iron Grades

No. 1 Cupola Cast	25.00-30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
Wheels	20.00
Rails, Random Lengths	20.00

SEATTLE

No. 1 Heavy Melt. Steel	$22.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Busheling	17.50
Nos. 1 & 2 Bundles	18.00
No. 3 Bundles	nom.
Machine Shop Turnings	15.00
Mixed Borings, Turnings	15.00
Punchings & Plate Scrap	30.00
Cut Structurals	30.00

Cast Iron Grades

No. 1 Cupola Cast	25.00
Heavy Breakable Cast	20.00-22.00
Stove Plate	25.00
Unstripped Motor Blocks	20.00
Malleable	25.00
Brake Shoes	25.00
Clean Auto Cast	25.00
No. 1 Wheels	25.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Railroad Malleable	22.00
Rails, Random Lengths	22.00
Angles and Splice Bars	22.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	18.00
Nos. 1 & 2 Bundles	16.00
No. 3 Bundles	nom.
Machine Shop Turnings	12.00
Mixed Borings, Turnings	12.00
Punchings & Plate Scrap	28.00

Cast Iron Grades

No. 1 Cupola Cast	25.00-30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
Rails, Rerolling	26.00

HAMILTON, ONT.

(Ceiling prices, delivered)

Heavy Melt.	$23.00
No. 1 Bundles	23.00
Mechanical Bundles	21.00
Mixed Steel Scrap	19.00
Mixed Borings, Turnings	17.00
Rails, Remelting	23.00
Rails, Rerolling	26.00
Bushelings	17.50
Bushelings, new factory, prep'd	21.00
Bushelings, new factory, unprep'd	16.00
Short Steel Turnings	17.00

Cast Iron Grades*

No. 1 Cast	48.00
No. 2 Cast	44.00

* Removed from price control Aug. 9, 1947; quoted on basis of f.o.b. shipping point.

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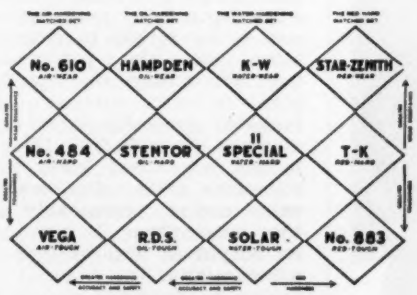

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5. To check and control the hardenability of water-hardening Matched Tool and Die Steels, Carpenter developed a special Cone Test. This test assures that sections of the same size will have uniform hardness penetration in shipment after shipment.

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- **Easier selection for each job**
- **Faster tooling-up**
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- **Lower production costs**
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- **Increased plant output**

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WITH HONED RACEWAYS

Sheets, Strip . . .

Additional companies revise schedules of extras to meet stiffening competition

Sheet Prices, Page 134

Chicago — Extras for processing, heat treating and on quality for a wide range of sheet products were reduced by Inland Steel Co. last week, the company's action reinstating those extras which had been in effect from Nov. 19, 1948, to Mar. 21, 1949, at which time new ones, in many cases 100 per cent greater, were applied (STEEL, Mar. 28, p. 138).

Tonnagewise, the most important reduction is the change on pickling hot-rolled sheets. In the previous card, a table was set up showing extras varying from 35 cents to 45 cents for the pickling charge with width and gages from 13 gage through 18 gage and establishing a flat 45-cent pickling charge for hot-rolled annealed sheet gages of 19 and lighter. The new action re-establishes a flat 25-cent charge for the heavier gages, and a charge of 30 cents for pickling 19-20 gage, 35 cents for 21-22 gages, and 40 cents for 23 gage and lighter. Also affected are extras for resquaring, stretcher leveling, restricted thickness tolerance, normalizing and box annealing, and special soundness quality, the latter extra now having been abolished.

District mills continue uncertain as to their customers' requirements in the next period. Their uncertainty, however, is only reflection of customers' own inability to gage future production, a situation which time instead of clarifying has only muddled.

Many companies, notably appliance manufacturers, had hoped by this time to have started on an upswing. But this has not yet developed in any pronounced degree, and some of the more optimistic manufacturers are now being forced to retrench. One stove maker plans permanently closing and selling its nearby branch plant in early summer. Appliance makers generally are eliminating many of the frills from their products in the hope that lower prices will stimulate sales. One washing machine maker, presumably acting on this assumption, is now increasing its output of wringer-type machines substantially.

Cleveland—Price extras on hot-rolled sheet and strip have been revised by Republic Steel Corp. to put them into line competitively with those of other major producers. Revisions were principally on size extras, and resulted in a slight downward adjustment. Demand for flat-rolled carbon products remains strong, largely due to continued heavy requirements of the automotive industry. Orders for galvanized sheets are still in excess of production capacity.

Pittsburgh—Carnegie-Illinois Steel Corp. has reduced coating extras applicable to galvanized sheet items an average of $1.50 per ton, effective May 10, to reflect recent reduction in zinc to 12.00c per pound. Other producers are expected to take simi-

lar action based on industry wide galvanized coating extras for specific sheet gages which are tied in with price of zinc ranging from 5 to 25 cents per pound. Outside of shipment of sheets by barge to the St. Louis area by one interest, there has been little evidence of producers widening scope of product distribution as result of growing competition. Sellers contend they are maintaining f.o.b. mill pricing policy and will continue to do so until legality of absorbing freight is clarified.

Completion of a modernization program on 3 slab heating furnaces in combination with restricted annealing capacity has resulted in Jones & Laughlin Steel Corp. having substantially larger tonnage of hot-rolled sheet tonnage available for distribution. Expansion of company's facilities at Cleveland has brought about a similar condition.

Trade is anxiously awaiting U. S. Steel Corp.'s scheduled adjustment in sheet and strip extras. At least two interests are holding up decision to reduce extras to competitive levels until this action is made public.

Sharon Steel Corp., effective May 6, reduced base price on hot-rolled strip, 6 inch and narrower, $2 per ton to $3.25 per 100 pounds, the level previously quoted only for wider than 6 inches. Company also revised size and other extras applicable to hot-rolled strip to competitive levels on same date. All producers in greater Pittsburgh area are now competitive at $3.25 base on hot-rolled strip; likewise are competitive on extras. Jones & Laughlin reduced its hot-rolled strip price $1 a ton when similar action was taken on hot-rolled sheets last month. Similarly it has recently been noted that Allegheny Ludlum reduced silicon sheets on transformer 65 and 58 grades to competitive levels soon after Apr. 18 announcement such action was taken on transformer 72 grade. Allegheny Ludlum is no longer producing hot and cold-rolled strip so that previously published premium prices are no longer applicable; company would quote competitive prices should they re-enter this field.

Boston—Although within the usual lead time for early third quarter schedules, bookings for that period are lagging with indications that the tonnage will be under that placed for current quarter. Several reasons are assigned for reluctance of consumers to place forward orders, including inventory policy, lower requirements at present rate of operations, summer vacations, and general price uncertainty. The latter is more of a factor than realized. While reductions in steel prices so far have been confined to elimination of premiums and to reductions on galvanized products due to lower zinc costs, numerous buyers noting these revisions and declines in nonferrous metals and other commodities, have convinced themselves that basic steel prices also will be revised downward. In any event, competition among mills for orders is back in full force with more consumers buying from points from which steel can be delivered at lowest price.

New York—Sheet consumers report that while supply has eased noticeably, they still do not find major

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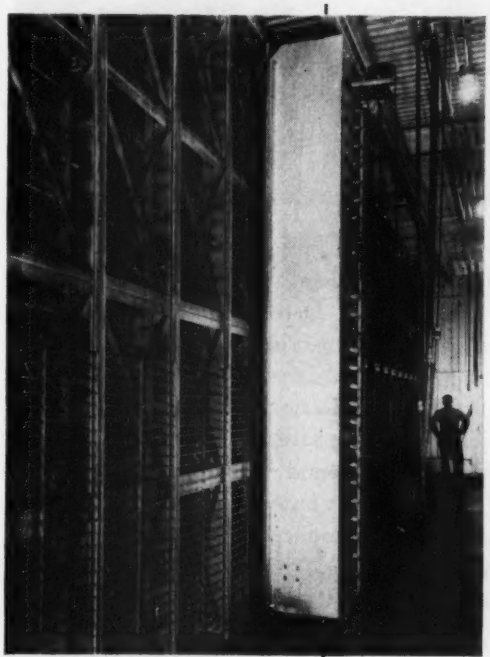

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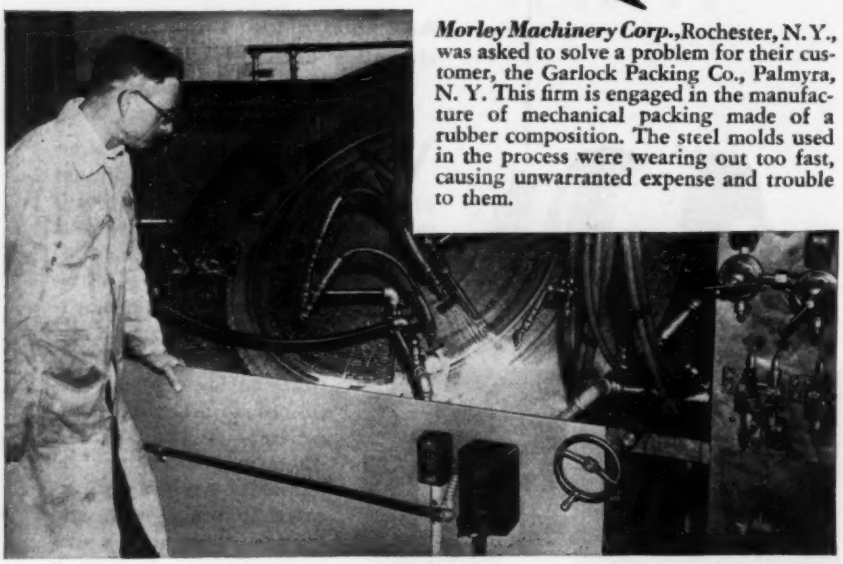

Morley Machinery Corp., Rochester, N. Y., was asked to solve a problem for their customer, the Garlock Packing Co., Palmyra, N. Y. This firm is engaged in the manufacture of mechanical packing made of a rubber composition. The steel molds used in the process were wearing out too fast, causing unwarranted expense and trouble to them.

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grades at standard prices too plentiful. Some are inclined to regard the situation, especially with regard to cold-rolled sheets and galvanized, as being on the tight side. Hot-rolled sheets are in fair supply; specialties, such as stainless, low silicon, and even enameling sheets, are in easy supply.

While some consumers are having some difficulty in getting certain grades of sheets at standard prices as quickly as they want them, even despite willingness to absorb freight from some of the more distant producing centers, there are others who have more tonnage on hand than they can absorb and who consequently are out of the market completely and, in some instances, are still cancelling tonnage. However, there are fewer cancellations and deferments than there were and, broadly speaking, while supply is definitely much better, the market on the major grades is still not too easy.

At the same time, consumers are showing no great interest in future commitments. Sellers generally opened their books for third quarter two or three weeks ago, but state that orders for that position are coming through rather slowly.

Philadelphia—Sheet and strip producers continue to adjust extras, with the leading eastern producer revising hot strip, rolled and slit edges, as of May 10. This follows the recent action on hot sheets. Consumers report little difficulty in getting hot-rolled sheets, but they say cold-rolled and galvanized sheets are still in fairly tight supply.

Cincinnati — District sheet mills continue capacity operations against firm current demand, although easiness appears in some specialties. The trend of many buyers toward policy of anticipating only nearby needs is slowing the work of filling third quarter schedules. One district interest has cut steelmaking because of a drop in sales of ingots, leaving a surplus over rolling capacity.

St. Louis—Demand for cold-rolled sheets, formerly a top-pressure item among local producers, has dropped substantially in the last two weeks and this product has become "a drug on the market." Cancellations generally are no more numerous than in the last four months, but replacement orders are not so quickly available. Back of it are large cold-rolled sheet inventories in the hands of stove and refrigerator manufacturers who obtained them in expensive conversion deals or in the black market. These plants now are rushing desperately to work them off in anticipation of price drops, either in steel sheets or in their own products. Galvanized roofing and tin plate demand remains strong, however. Pressure for virtually all steel destined for the farm market remains strong. The drop in demand for products, with the exception of galvanized roofing, has automatically junked the system of company allocations to customers.

Birmingham — Potential demand for sheets is exceptionally strong. The district has not for years produced sheets in the volume needed so that now, even with the current slowing down of industrial activity, output of district mills is taken promptly. Indications are that it

will continue thus for the balance of the year. Moderate output of strip is reported.

Los Angeles—Although one producer reports bookings have picked up in the last ten days, demand for flat-rolled products generally continues to recede. Light gage galvanized is virtually the only category remaining fairly tight. Mills that have opened third quarter books are having difficulty filling them, and some observers anticipate a sharp drop in operations before many more weeks. New 26-inch sheet mill has been completed by Pacific States Steel Corp. at Niles, Calif., although a strike has delayed the start of production.

San Francisco—Demand for sheets may reach parity with supply in this area during the next quarter. Consumers anticipate a price reduction and, meanwhile, are buying only enough to fill requirements of the work in hand. Possibly a price cut wil bring some forward buying.

Plates . . .

Plate Prices, Page 135

Boston—Of the major industries consuming plates in this area, only shipbuilding is holding close to levels prevailing early in the year and in this category layoffs are ahead at the Boston Navy yard. While plate inventories as a rule are not large, there has been a decline in requirements, notably among tank shops and miscellaneous industrial users. Some plate mills had to hustle to fill second quarter schedules and have meager bookings for the third quarter. Larger plate mills are better off than some of the smaller ones.

New York—Plate production continues in excess of new orders with mill backlogs now at the lowest point since prewar. Most mills need further tonnage in order to sustain a high rate of operations over the remainder of the quarter; and also are showing a lively interest in third quarter business, which so far has been coming through slowly.

Prospects are for a rather dull two or three months at least, insofar as new business is concerned. Jobbers are rounding out their inventories rapidly and, therefore, are pressing less actively for plates; demand from the railroads and railroad equipment builders is becoming increasingly slack; and prospects are poor for any early pick-up in shipbuilding requirements.

Philadelphia—District plate mills report a decided lag in new buying. The expected seasonal increase in light tank work has failed to materialize and in some lines where business has been holding up well, sluggishness now is developing. Demand from large electrical manufacturers and from makers of pressure tanks is beginning to slow up appreciably. Lag in railroad requirements is becoming more pronounced. Most plate mills can still accept tonnage for shipment before the end of the quarter, and it appears as if there is not enough business in sight to maintain present production rates. One district plate mill took off an open hearth last week, cutting production for the first time in months; as a

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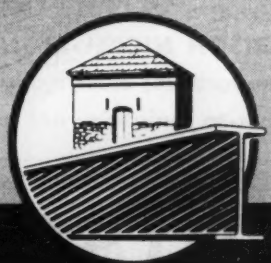

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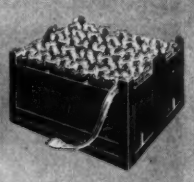

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In Canada: International Equipment Co., Ltd., Montreal and Toronto

purely retrenchment measure, for the first time in several years.

Chicago — Although scheduled ahead for about three months in many instances, tank fabricators concede that special shop jobs can be promised for quicker delivery if necessary and that the general letdown in business expansion is taking its toll of new inquiries. Plates have eased considerably, the two-month lead time now necessary for material from some mills being a vast improvement over that quoted earlier this year. Fabricators generally have abandoned escalator clauses in their contracts, but write them in at the insistence of some customers as protection in case of a price decline. Easier supply conditions have not eliminated entirely bottlenecks in manufacturing operation arising out of the plate shortage. One mill is so oversold this quarter that at least two plate consumers have been forced to curtail operations until tonnage promised for earlier delivery is received. Possibility of this situation repeating is seen in the carry-over into June in at least one mill's schedule. True volume of plate demand locally probably will not become evident until these arrearages are made up. It is thought that in plates, particularly, very little buying for inventory can presently be done.

Birmingham — Takers are readily available for this district's entire plate output. Backlogs, while not exceptionally heavy, are in line with the usual procedure of booking about one quarter ahead. Tank production is taking a sizable tonnage of plates as are general and widespread requirements of the district.

Los Angeles—Plate supplies are larger and delivery time from both western and eastern sources is considerably improved. Although demand in general is off, the requirements of pipe fabricators remain substantial, and material for heavy pipe has eased only slightly.

Todd Shipyard Corp., San Pedro, Calif., has been awarded the contract for $370,300 repairs to the Isthmian Line freighter, *Steel Chemist*. Work will include replacement of 109 bottom plates.

San Francisco—Demand for plates, especially lighter gages, is beginning to slump. Supplies, both in consumer and jobber hands, are "ample" for immediate needs. Heavier gages still remain relatively tight. As in all other products, buying of plates is on a hand-to-mouth basis.

San Francisco—Kaiser Co. Inc. reduced Fontana plate prices $19 a ton last week from 5.30c to 4.35c, mill. Kaiser is absorbing sufficient freight into this city to become competitive with Bethlehem Pacific Coast Steel Corp. The company is absorbing more than 28 cents in freight to give it a delivered price of 4.402c against 4.4018c for Bethlehem.

Seattle—No important plate tonnages are up for figures, although sizable projects are pending in Alaska. Shops report demand for boilers is slow, but there is a fair volume of tank construction. Business is down compared with a year ago. There is considerable volume in jobs involving less than 100 tons each.

Steel Bars . . .

Bar Prices, Page 134

New York—While hot carbon bar mills still have tonnage available for second quarter, they believe they will be able to obtain sufficient added business to maintain operations at a reasonably high pace into summer. The outlook for beyond is somewhat mixed, with the majority of producers anticipating sluggish demand through July and August, with a likely pick up in September.

Sellers generally have dropped the consumer quota plan and are having difficulty in building up much in the way of backlogs for future shipment.

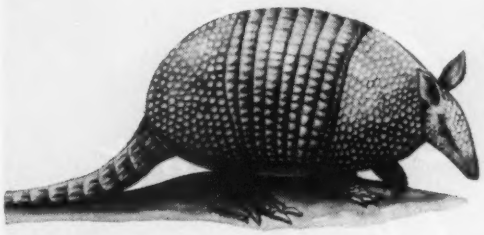
Cold-drawn bar sellers are experiencing a substantial drop in demand. One eastern interest reports a decline of about 35 per cent in April, as compared with the preceding month, and points out that the current month so far has witnessed a further drop. Cold drawers not directly related to hot-rolled bar producers, report that whereas for many months past they have been unable to obtain sufficient hot stock to meet cold-drawn bar demand, they now are experiencing a sharp decline in demand and substantial increase in receipt of hot bars. Some cold drawers are receiving more hot bar tonnage than they can readily use.

Decline in demand by warehouses is being especially felt by the cold drawers. Many jobbers now have heavy stocks and in some areas are reducing prices in an effort to move surplus.

Boston—Cold-finished carbon bar demand has slackened to the point where more producers are operating at lower levels. Deliveries on all grades of bars have improved to such an extent that users are now ordering on a nearby delivery basis and are drawing steadily on inventories. While consumers' allocations as such are meaningless, consumers are not taking in tonnage at former quota levels and are being offered carbon bars tonnage from some suppliers on a new account basis. Demand for alloys continues to lag.

Pittsburgh—Some sellers are offering cold-finished bars for delivery within 10 days, while some integrated interests can do no better than ship within 30 to 45 days. There is little distinction as to size classifications in regard to delivery promises. Sellers are still confronted with frequent hold-ups of deliveries or outright cancellations. However, customers' efforts toward elimination of inventories has reached the point where some producers anticipate a resumption of new ordering within a few weeks. This view is based on reports that consumption of cold-finished bars is at substantially faster rate than new ordering would indicate. Most hot-rolled carbon bar interests have had little difficulty in filling second quarter production schedules. However, for full third quarter schedules the outlook is not too promising.

Los Angeles—Requirements of the large manufacturing consumers are holding steady, but bar demand from jobbers is off steeply, excepting for small sizes. Warehouses have good bar stocks and are buying only to fill in their inventories.



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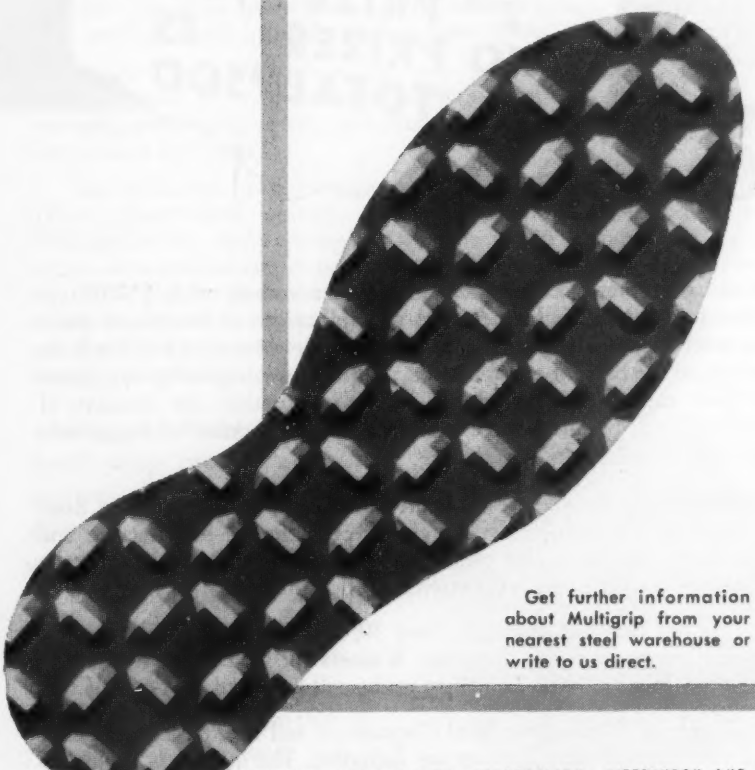

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Tubular Goods . . .

Tubular Goods Prices, Page 135

Pittsburgh—Relatively prompt deliveries are available on seamless mechanical carbon tubing; hot-rolled is promised within three to four weeks, while cold-drawn deliveries for under 1½-inch can be obtained by latter part of June, with 1½-inch and over not available until October. Demand for hot-rolled mechanical tubing has receded sharply in recent weeks for use in making conveyors, electrical appliances and similar products. This item is no longer distributed on an allotment basis. Alloy and stainless tubing have been available on relatively prompt delivery basis for months.

Demand for pressure and boiler tubing continues heavy with supply still tight for larger sizes. Sellers have discontinued mill allotments for pressure tubing 1-inch and smaller.

Seamless standard pipe is still in fairly good demand, although sellers are making headway against order backlogs. National Tube Co. is last interest to discontinue distribution of pipe on consignment basis for jobber account. Jobbers' stocks of standard pipe items, while still unbalanced, notably for butt weld, are showing evidence of returning to near normal levels. Distribution of butt weld standard pipe remains on a mill allotment basis. Requirements for large diameter line pipe show no signs of easing on delivery schedules through remainder of this year. However, sellers note some cancellations developing for drill pipe, oil well casing, etc.

National Tube Co. reduced galvanized pipe prices $1 (½-point higher discount) effective May 11, to reflect the decline in zinc to the 12-cent level. The company established the "formula" of one point adjustment in galvanized pipe discounts for each cent fluctuation in zinc based on zinc price of 12 cents per pound. Whether the company will continue this "formula" price adjustment should zinc fall below 12.00c is now under study. Company also is expected to announce results soon of a thorough study of both black and galvanized pipe discounts in establishing new schedules.

Mercer Tube Co., Sharon, Pa., has reduced prices for black and galvanized standard steel pipe price to about competitive levels.

Spang-Chalfant division of National Supply Co., Jones & Laughlin and Wheeling Steel also reduced galvanized pipe prices $1 per ton, effective May 11. Fretz-Moon Tube Co. did not reduce its galvanized pipe quotations to reflect previous ½-cent reduction in zinc, but on May 11 adjusted its prices to reflect accumulated decline of 1 cent in zinc as follows: ½ point higher discount to new level of 13 points on ⅛-inch and 15 points on ¼-inch pipe; up 1 point to 11½ points on ⅜-inch pipe.

Cleveland — Republic Steel Corp. has reduced its prices on oil country tubular products into line with competitors. The reduction averages around $6 to $7 a ton.

As a result of additional price cuts on zinc, Republic made another increase in discounts on galvanized

pipe, effective May 12. Since zinc started its downward price trend about two months ago, Republic has increased galvanized pipe discounts 5½ points per ton. The latest change in discounts restores the traditional spread in discount between black and galvanized pipe. Consequently, there is belief there will be no further increases in discount on galvanized even if there would be a further decline in the price of zinc.

Chicago—Raw materials problems of most independent pipe and tubing producers are on the way to being licked. One maker reports that hot and cold-rolled strip deliveries are now completely adequate and, while total level of customer demand is off, the company is still operating at capacity. Another, also operating at capacity, complains of continuing difficulty in getting tube rounds but says the delivery delay is being reduced. Overall demand for all products and from all directions has tapered. A large part of the buying hesitancy is based on inventory consciousness, and many users are buying only limited quantities for stock, while others are working off their excesses. This paring in a few instances. has been carried too far, consumers being caught short and pressing for prompt delivery of certain sizes. Supply has outstripped demand at least temporarily in many lines of products containing mechanical tubing and until normal sales expectations can be gaged new ordering is reduced. Cost of stainless tubing possibly is a major factor preventing users from maintaining more than minimum stocks, but at the same time distributors of the "garden" varieties of pipe are almost equally cautious about overstocking because of the possibility of price declines or further contraction of their customers' needs.

Los Angeles—Demand for tubular products generally continues to ease. Kaiser Co. Inc. has reduced prices for Fontana pipe, bringing its entire line of tubular products down to competitive levels. Pipe requirements of the oil industry continue light, although this is not the case with storage tanks and equipment, for several large producers are specifying on a considerable scale. Pipe exports have been resumed for the Saudi-Arabian oil line, but inquiries from the Far East for pipe and other steel products have been greatly restricted by the strife in China.

Seattle—Easing of the supply situation seems to have adversely affected the cast iron pipe market which is inactive, an unusual situation at this season. Agencies are replenishing inventories.

Export Price List Revised

New York—Reflecting reduction in price of zinc, United States Steel Export Co., U. S. Steel subsidiary, has announced the following new export prices, effective as of May 11, on carlots with freight included to New York, Philadelphia or Baltimore.

	Per Cent off List
American Standard Pipe, T. & C.:	
Butt Weld, 2½ and 3 in., galvanized	25.6
Seamless, 3½ to 6 in., galvanized...	18.1
English Gas Tubes, T. & C.:	
Butt Weld, 2½ and 3 in., galvanized	27.5

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If, instead you resharpen on a fixed-schedule basis, you again run the risk of loss. If the schedule is based on using a *normal* tool or wheel, one that is even slightly defective will produce rejects before resharpening. Unexpected changes in hardness of metal or in other operating conditions may also cause premature dulling, with the same result. If the resharpening schedule includes a factor of safety to allow for such possibilities, most of the time resharpening will be done more frequently than necessary, thus shortening total tool life and increasing your down-time.

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Structural Shapes . . .

Structural Shape Prices, Page 135

Boston — Inquiry for fabricated structural steel is light and the volume of new tonnage being estimated is low for this season. Slump in private construction is not being offset by public building, notably highway bridges. Most fabricating shops are buying as needed for specific jobs and frequently sound out suppliers as to price and delivery of plain material before estimating. Frequently, best delivery cements the order.

New York—Preponderance of current structural demand continues to be of public character, with the largest award involving 9100 tons for a Port Authority bus terminal in Manhattan. Private work, however, does include some fair sized jobs, with 1500 tons being placed for a Public Service station addition at Sewaren, N. J., and 1000 tons for a warehouse for the International Harvester Co., Menands, N. Y.

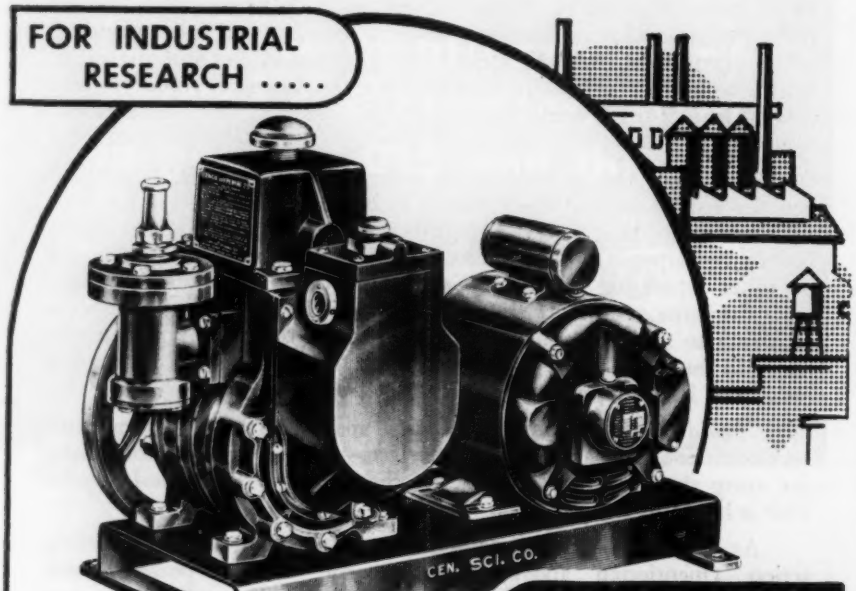
Structural shop backlogs continue to shrink, with few fabricators having more than four months' work on hand; a number not more than two. Competition is keener, but not disorganized. Meanwhile, fabricating shops are building up stock inventories rapidly to a normal basis, as shape deliveries are much larger than at any time in recent years. On most sizes, fabricators can still obtain shipment against new orders before the end of the quarter.

Philadelphia — While some fairly sizable jobs are active, buying of structurals here is quiet with fabricators still eating into backlogs. A leading inquiry involves 2500 tons for an apartment, School House Lane, Philadelphia. Also pending are 180 tons for bridge reconstruction, Pennsylvania railroad, at Gillitzin, Pa.

Chicago—June delivery on wide-flange beams is being offered in this district by one eastern producer, reflecting the nearness of demand-supply balance and the competitive struggle which, were it not for f.o.b. mill pricing, would be much more evident. Local producers continue fully scheduled on shapes, but recognize the slowing down of fabricator ordering. Order backlogs with most of the larger fabricators are being reduced steadily and among many of the smaller shops operations are conducted on virtually a day-to-day basis. New projects generally require relatively small tonnages but now bring forth considerably more bidding. Illinois state highway department contract letting scheduled twice this month and once in June will be the first in seven months.

San Francisco—Excepting a few items rolled in eastern mills, supplies of structural items are plentiful. Restricted general building has curtailed demand. Plans of the state of California to increase public building this year and next indicate a forward backlog of orders of some size, but no broad pick-up in demand is likely until private building revives.

Seattle—Fabricating plants have ample backlogs, insuring steady operations for the coming six months. The supply situation is much easier.



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Wire . . .

Wire Prices, Page 135

Boston—Some slackening in releases against automotive orders is developing, although demand from that field is holding up better than in most consuming lines. Buying of manufacturers' wire has not recovered from the first quarter slump and users are operating on inventories and placing new orders for fill-in needs. This is notably true of the screw manufacturing consumers. Rods are more easily available and some finishing departments have curtailed production.

Birmingham — Considerable firmness has developed in wire products as a whole following a moderate letdown several weeks ago. Woven wire fencing is again in strong demand, with an appreciable slackening noted in barbed wire. Most sizes of nails are in continued demand and for the most part supplies are short.

Hardware Cloth Prices Reduced

Sterling, Ill.—Effective as of May 4, Northwestern Steel & Wire Co., this city, reduced its price on hardware cloth about 5.5 per cent, or $19 per ton on account of the lowered prices of zinc.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 134

Seattle—Demand for reinforcing bars continues unabated. Estimating staffs are swamped with specifications. The volume of orders under 100 tons each is substantial. Mills are operating at peak capacity and backlogs are of major proportions. Large tonnages are still pending for military installations in Alaska. Columbia Basin projects are absorbing a heavy volume of reinforcing. Demand for merchant bars is about normal.

Silvery Pig Iron Declines

Keokuk, Iowa—Effective as of May 1, Keokuk Electro-Metals Co. reduced its prices on electric furnace silvery pig iron to the following levels: 14.01-14.50 per cent silicon, open-hearth and foundry grade, $80 per gross ton, f.o.b. Keokuk, Iowa, or Wenatchee, Wash.; 12½ lb Keokuk piglets, $85 per gross ton, f.o.b. Keokuk, Iowa. Freight is allowed in both instances to normal trade area.

Pig Iron . . .

Pig Iron Prices, Page 136

Cleveland—For some time foundries have been working off inventories of pig iron. Belief that some of them have completed this is voiced by one iron producer who has received new orders from some of these shops.

Republic Steel Corp., which for the last year has been producing only low phosphorous iron at its Troy, N. Y., blast furnace, is resuming the production there of basic and No. 2 foundry iron. This will permit some of Republic's eastern customers to be served with less freight involved than was the case with shipments made from its Buffalo furnaces. Lessened demand for low phos iron makes it possible for Republic to devote its Troy furnace to basic and No. 2 foundry iron production also. Prices on the latter two grades have not been announced.

Republic also has reduced its prices of basic and No. 2 foundry iron at Birmingham to $38.88 and $39.38, respectively, in line with reductions made earlier by the other two producers of merchant iron there.

Boston—While most melters' inventories of iron would hardly be at a safe level for normal rate of output, tonnage at hand is sufficient for current schedules. Buying is light and on a hand-to-mouth basis. Exceptions are a few of the larger shops where inventories are heavy. Recent scramble in pricing at Buffalo and a few other points has narrowed delivered price spreads affecting a wider area in New England. Most merchant furnaces, now piling iron, are actively seeking third quarter commitments.

New York—Pig iron demand continues to lag, with trading off again this month and with little prospect of any substantial improvement over the next two or three months. Consumer inventories are being reduced, but not sufficiently to warrant any early upturn in demand. Meanwhile, export demand is quiet with little of importance coming before the trade since the purchase a few weeks ago of two sizable lots—40,000 tons for the United Kingdom and 60,000 tons for Japan. A little iron is still coming in from abroad against old commitments, but there is practically nothing in the way of new buying of foreign iron. Some special foreign irons, such as Swedish charcoal iron, are being purchased, but orders are small-carlots or less.

Philadelphia — Shipments of pig iron continue to decline with one merchant furnace reporting a drop of about 35 per cent from the first-quarter average and with the trend still downward. Meanwhile, merchant furnaces generally are stocking iron with the probability that some capacity will go out soon. Most producers see little likelihood of improvement in demand before late summer.

Pittsburgh—Merchant iron demand is the smallest since prewar with sellers stockpiling for the first time in years. Anticipated upturn in seasonal demand for plumbing fixtures has been disappointing to date, resulting in sharply curtailed operations and many shutdowns by foundries catering to this industry. Until the over-stocked inventory of enamelware items is substantially reduced,

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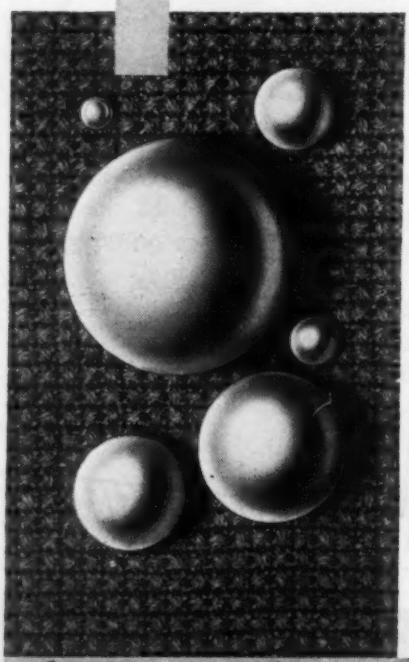

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there is little prospect of improved foundry activity in this field. Similarly, a number of large steel foundries here have reduced operating schedules because of dearth of railroad equipment orders for axles, wheels, etc. Merchant blast furnace interests in northern states are reluctant to reduce prices until negotiations of new labor contracts are terminated. It is argued that price reductions at this time will not generate new business.

Buffalo—Leading merchant iron sellers were looking for a falling off in foundry demands during May, but the slackening is more pronounced than many had expected. Some melting operations are down to two and three days a week. The recent shutdown of one stack, plus the increased movement of iron to Michigan sources, makes it possible for producers to avoid piling stock.

While rumblings are heard about an additional downward adjustment in prices, producers point out that it would be difficult to lower prices in view of higher overhead charges.

Cincinnati—Demand for southern iron failed to get immediate impetus from the lowered price. Shipments from the southern and northern furnaces have slumped to the lowest levels of the year. Lowered quotations on castings, due to decreased material costs and competition, combined with better inventory position may bring a pickup in demand in the near future.

St. Louis—A sudden flurry of order cancellations and indefinite holdup instructions have forced the first voluntary cutback in pig iron production here since the war. Koppers' two blast furnaces at Granite City, Ill., dropped back to 85 per cent of their 1100-ton daily capacity, with the prospect they will curtail an additional 10 per cent soon.

In the last 10 days, numerous foundries have made new slashes in operations, one of the biggest shutting down for the rest of the month and another quitting indefinitely. Some, however, are increasing pig iron purchases, but not enough to offset the cancellations. Part of the new foundry slowdown is attributed to working off of inventories; part to cancellation of old castings orders and failure to obtain new business. The overall result here is that customers and pig iron producers now have ample ground stocks for the first time, and new orders are not sufficiently numerous to keep furnace operations at capacity.

Coke production here has been cut to 87 per cent of capacity, and Koppers has ceased buying part of its coke requirements in the open market.

Iron makers here say no price reductions are being considered despite slackening demand.

Birmingham—Marked slump in foundry operations has resulted in considerable tapering off in demand for pig iron in the southern district. Merchant iron melters do not believe the let down will last, however, and are predicting a return to full production during the early summer. Republic Steel Corp., nevertheless, has taken off one of its furnaces at East Thomas due largely to lessened demand.

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Scrap . . .

Scrap Prices, Page 140

Pittsburgh—Small tonnage sale of No. 1 heavy melting steel scrap at $23, off $1, is considered the market in the absence of representative tonnage purchases by leading consumers. Recently established $2 differential for No. 2 heavy melting at least temporarily does not hold, based on absence of any new purchases plus the fact that brokers are buying this grade at $22 to fill old orders. The turnings market is definitely stronger on a sale of over 2000 tons of short shoveling at $19.50. Threat of a coal strike has prompted blast furnace interests to charge more turnings in an effort to conserve coke. Activity in cast scrap items remains dormant, with prices generally unchanged. Prices for railroad items reversed the recent downtrend last week with Pennsylvania and B. & O., awarding No. 1 heavy melting at about $1 above previous levels. Prices for railroad specialties also are stronger.

Boston—Prices on all grades of scrap are weak with buying light. Steelworks' needs are lower with operations off substantially in this territory, while little open-hearth scrap is moving to Pennsylvania. Cast grades are also in the doldrums with buying held down to scattered car and truck lots.

New York — New York brokers' buying prices are unchanged, although nominally so as there is little business to test the market. Traders generally see little improvement in the immediate future, although they believe the market has about reached bottom on at least the cast grades. But even with respect to cast scrap, prices depend largely upon the future trend in pig iron prices. Should there be a sharp drop in pig iron, cast scrap prices probably will move lower.

Buffalo—Lower prices were again substantiated in the scrap market as orders for close to 5000 tons of steelmaking grades were placed at $1 below recent nominal slashes in ranges. No. 2 heavy melting, No. 1 bundles and No. 1 bushelings were changing hands at $20 a ton, while No. 2 bundles were $2 lower. The market for No. 1 heavy melting was placed more on a nominal basis as a longtime consumer of the top grade is now operating in the No. 2 market. No. 1 was quoted at $23-$23.50. Buying interest in short shoveling turnings was reported around recent levels of $16.75-$17.25. Borings and turnings were $1 under short shovelings. Rail specialties and low phos were off $1 to $2.

With the market here weak, shipments of scrap into Canada are increasing. During the week five barges carrying 3562 tons of scrap from the eastern seaboard were consigned to the West Shore dock for transfer to gondola cars. The scrap moved from here to Hamilton, Ont. It was the fourth such transfer recorded here this year. A number of other barge fleets are reported in the canal en route here. A large portion of these shipments will go to local mills.

Philadelphia — Demand for scrap remains sluggish, with further price reductions in several steel grades

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6
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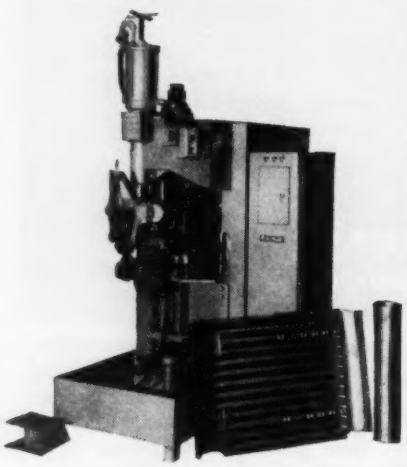

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3 Desirable high power factor (95%).

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5 Deeper throat depths with essentially no increase in power demand.

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TAYLOR-WINFIELD
RESISTANCE WELDERS

posted, but no change in cast. No. 2 heavy melting and No. 1 busheling are off slightly at $19.50 to $20, delivered; No. 2 bundles, $17.50-$18; bar crop and plate and punchings and plate scrap, $25-$26; cut structurals, $24-$25; heavy turnings, $21-$22.

Cleveland—The lackadaisical scrap market will deteriorate even further in June, say sellers and consumers. They hold this belief because steel mill inventories of scrap still are heavy and the need for capacity production of steel is lessening. In addition, steel mill operations may be interrupted by a coal miners' strike.

Reduced operations in many metalworking plants keep the flow of industrial scrap low, with a result one dealer engaging solely in the industrial scrap trade has laid off additional yard employees. This dealer, who says his business is at the lowest level in nine years, now has only half as many employees as he had at the beginning of this year.

Even though scrap prices are in most cases at new postwar low levels, dealers are not inclined to build up an inventory. Their hesitancy and caution stems from the softening of business in general.

Only current spot of strength here is in blast furnace grades, which last week edged up 50 cents over the previous week. In some quarters this was attributed to a stocking up by consumers in anticipation of a coal strike; others said the bettered demand results only from the lower price levels.

Detroit — The local mill finally booked a small tonnage of open-hearth scrap, establishing a price pattern still lower than current depressed levels. No. 1 bundles, No. 1 busheling and plate scrap are all off $2 a ton to a maximum of $16 per ton, while No. 2 heavy melting is off $3.50 to a top of $13.50, with No. 2 bundles bringing 50 cents less. Dealers quickly began to ship at these prices, glad of the opportunity to move something. The action should bring to an end the practice of paying premiums over published prices not actually given a firm test by the market. McLouth Steel Corp., Trenton, Mich., will discontinue electric furnace production on May 20 until August while a blooming mill is being installed.

Cincinnati—Scrap quotations are unchanged for the first time in many weeks. However, the whole list is weak and subject to further cuts should tonnage buying appear. Prices are nominal in the absence of large-scale buying. Considerable scrap melt is being sustained from inventory. Disinterest of foundries stems from lack of castings business.

Chicago—To the younger men in the scrap trade, the near-stagnant state of the market increasingly assumes the aspects of calamity. Older heads see nothing particularly disastrous about it and, in fact, say that as long as a break had to come it was fortunate it was swift and sharp and that normalcy will be hastened by the abruptness of the drop.

Prices last week underwent another dip on the basis of brokers' offerings, No. 1 heavy melting being quotable at $20-$22, with No. 2 scrap overlapping this price at $19.50-$21. No. 1 bundles also are at the $20-$22 level. While some trading continues to be done against old orders, new mill purchases are completely lacking. Brokers' offering prices of machine shop turnings and cast iron borings are quotable at $1 higher while railroad specialties are off $2. One railroad list which closed last week brought forth more inquiries and about 10 per cent more bids than did the one for the previous month, although prices were lower than at that time. Indications are that decline in consumers' delivered prices for railroad material on the basis of this and other lists is possible, although late last week such weakness was not apparent.

St. Louis—Dealers' offering prices on scrap continue to drift lower in virtually a complete demand vacuum. Neither mills nor foundries are showing any interest in returning to the market. Ground stocks are increasing, due to recent fair shipments plus occasional shutdowns of open hearths and cupolas. Previously scrap shipments on old orders usually did little more than keep mills abreast of the daily melt.

Birmingham—Scrap weakness continues with buying negligible. One large user moved several cars of miscellaneous scrap during the week. Heavy melting is again at $20.

Dallas—Steel scrap prices remained nominal last week with activity continuing meager. Demand for nonferrous metals was even less active with general easiness in markets reflected in lower prices for scrap. Steel scrap moved only in limited consignments. Some local dealers were shipping to Sheffield Steel at prices of $14 to $14.25 gross, Dallas, or $19.80 Houston basis.

Los Angeles—Buying remains extremely limited, and many scrap yards are virtually idle. Although dealers are attempting to keep material coming in, and have narrowed their margin in an effort to encourage collections, receipts are meager. Prices are unchanged, but the undertone is weak.

San Francisco—Although prices on steelmaking grades of scrap dropped another $2 at the first of May, mills believe quantities coming to market will exceed their needs. Suppliers show signs of uncertainty bordering on panic as prices trend downward. Biggest headache to domestic suppliers is the large amount of offshore scrap still coming in from the Pacific. Mills continue to buy domestic scrap selectively and in only small amounts, and further softening of prices is anticipated.

Seattle—Mills report normal receipts of steel scrap, the volume being more than is being consumed. However, inventories are not being unduly enlarged due to the uncertain future. The market is steady at $22 for No. 1 heavy melting.

Cast iron scrap has again declined, foundries paying a maximum of $25 while 300 tons were reported sold this week to mill interests at $23. Some foundries are out of the market, reporting ample inventories of both scrap and pig iron, the latter available as desired. Foundry operations in this area are estimated at 60 per cent of capacity representing a marked decline from a year ago.

Warehouse . . .

Warehouse Prices, Page 137

Cleveland — Although overall demand for steel has declined, some warehouses are finding their improved stocks are helping them get business. Whereas they could supply only some of the items specified during the period of heavy demand, they now can provide nearly all products specified.

Improvement in stocks at warehouses is working to the advantage of consumers, for they now can take advantage of tonnage discounts by concentrating all of their orders at one warehouse.

Cincinnati — Sales of warehouse steel are holding to satisfactory levels, although not in the volume of recent peak months. Most customers needs are readily available now from stocks, with exception of structurals and heavy plates on which mill shipments lag.

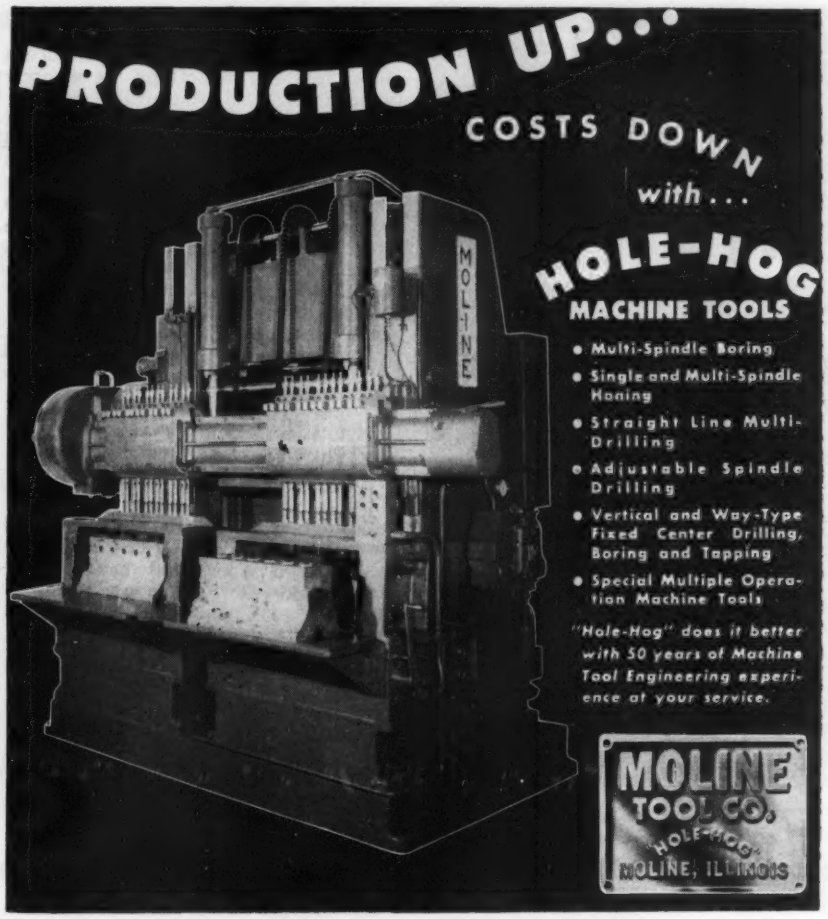
Chicago—Pick-up in inquiries from some previously depressed warehouse steel outlets is being noted locally, larger stamping shops particularly being cited. Sheet stocks continue to be unbalanced, especially in coated material, but mill receipts have improved noticeably over the last several weeks and this, coupled with buying hesitancy, has eased pressure on distributors materially. Hot-rolled bar stocks are now fairly well rounded out at many warehouses, but the turnover of these items continues extremely rapid in popular sizes. Shape fabricators are better able to meet their requirements at warehouses.

Birmingham — Demand for warehouse steel is off somewhat. The trend is not pronounced but noticeable. Stocks, for the most part, are improved but such critical items as carbon plates, flat bars and strip are still scarce. Sheets and round bars are easier.

Los Angeles—Steel jobbers report that some of their small customers are coming back after being out of the market for months. These users have worked down their limited inventories and are buying again, although on a strictly hand-to-mouth basis. With allocations generally off, warehouses are adjusting themselves to mill schedules. Considerable trading is being carried on between jobbers in an effort to balance inventories. Supplies are greatly improved.

San Francisco—Some jobbers are being caught with excessive inventories. Demand has tumbled so quickly and sharply the warehousing situation has been thrown into a state of confusion. Fabricators are buying only on hand-to-mouth basis, and restricting orders solely to immediate needs.

Seattle—Transition to a buyers' market finds wholesale jobbers with improved stocks which are expected to be back to normal within 60 days. Falling prices in some items have occurred. A competing interest has dropped structurals 40 cents to bring it into line with Geneva. Items containing nonferrous materials have also weakened, 20 to 40 cents on galvanized according to the quantity of spelter. Black sheets and cold-rolled items are unchanged.



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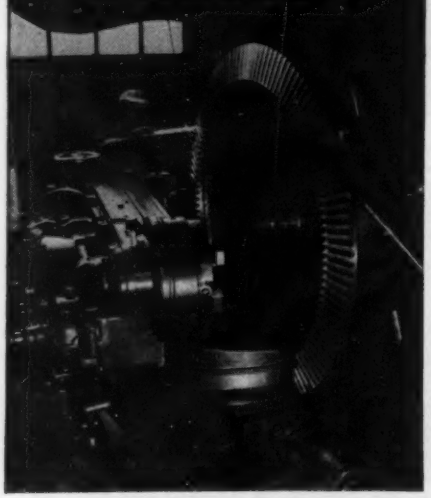

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Tool Steel . . .

Pittsburgh — Tool steel producers state further reductions in electric furnace melting operations are inevitable unless demand shows marked improvement soon. One interest here has shut down all its electric furnaces for month of May, another plans to curtail production below 50 per cent of capacity next week, while most interests state melting operations are off 40 to 50 per cent. Accumulation of large inventories prior to price advance last fall is important reason for present dearth of orders. Consumption of tool steels is said to be substantially above current new order level.

Bolts, Nuts . . .

Bolt, Nut, Rivet Prices, Page 137

Bethlehem, Pa.—Bethlehem Steel Co. has reduced base prices at Lebanon, Pa., on alloy and heat-treated carbon bolts and studs about 3 per cent, effective as of May 10. No change was made in prices on plain carbon material. Under the new schedules, alloy steel studs are now 45 per cent off list; alloy steel bolts, 40 per cent off; heat-treated carbon steel studs, 45 and 10 per cent off; and heat-treated carbon bolts, 40 and 10 off list.

Coal Chemicals . . .

Coal Chemical Prices, Page 136

Pittsburgh—U. S. Steel Corp.'s subsidiaries, effective May 6, reduced one degree Toluol prices 3 cents per gallon at all bases except Geneva which was reduced 1½-cents. The new quotations are: Clairton, 20 cents; Cleveland, 23; Lorain, 21.25; Gary and Joliet, 23.50; Fairfield, 20.25; and Geneva, 19 cents.

Iron Ore . . .

Iron Ore Prices, Page 136

Cleveland — Shipments of Lake Superior iron ore increased to 2,503,263 tons during the week ended May 9 from 2,435,027 tons for the preceding week and compared with 2,326,721 tons for the like week a year ago, according to the Lake Superior Iron Ore Association. This brought the season's cumulative total to 12,376,959 tons compared with 10,563,195 tons for the like 1948 period.

Shipments from United States ports totaled 2,468,197 tons during the week ended May 9, or a daily average loading rate of 352,600 tons, compared with 2,415,957 tons, or a daily loading rate of 345,137 tons, for the previous week.

Rails, Cars . . .

Track Material Prices, Page 135

New York — Freight car buying continues at a virtual standstill, with no orders reported so far this month. Nor is there early improvement in sight, as inquiry continues spotty. In fact, an inquiry for 50 automobile box cars for the New Jersey, Indiana & Illinois is the largest new list reported.

Last month only 30 freight cars were placed, the smallest total in recent years. These cars all went to commercial shops, according to the American Railway Car Institute.

Deliveries, however, were relatively high at 10,587 cars, compared with 11,910 in the preceding month. Commenting on the delivery situation, S. M. Felton, president of the Institute, stated that "April marks the last month in which we are likely to reach the 10,000-car goal, established in March, 1947.

"Several car building plants," he stated, "are closing down because their order books are exhausted and deliveries are certain to be lower in May and June, with progressively sharper declines indicated in the months thereafter."

Of the 10,587 cars delivered in April, 8499 were built by commercial shops and 2088 by railroad shops.

Order backlogs as of May 1 totaled 62,569, against 134,676 a year ago and 73,188 as of Apr 1, 1949. Of the total on order, 35,323 are with commercial shops and 27,246 with railroad shops.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

9100 tons, Port Authority bus terminal, Manhattan, New York, to Harris Structural Steel Co., that city.

8240 tons, Lake Charles bridges, Louisiana, to Virginia Bridge Co., Roanoke, Va.

1500 tons, Unit 4, station, Public Service Gas & Electric Co., Sewaren, N. J., to Lehigh Structural Steel Co., Allentown, Pa.

1000 tons, warehouse, International Harvester Co., Menands, N. Y., to Bethlehem Steel Co.

350 tons, power plant addition, West Virginia Pulp & Paper Co., Charleston, S. C., to Lehigh Structural Steel Co., Allentown, Pa.

350 tons, Public School No. 92, New York, to Dreier Structural Steel Co. Inc., Long Island City, N. Y.

315 tons, addition to municipal research building, New York, to Grand Iron Works, that city.

180 tons, Washington state, Enumclaw-Buckley bridge, to Pacific Car & Foundry Co., Seattle; Don L. Cooney, Seattle, general contractor, low $91,646.

STRUCTURAL STEEL PENDING

2500 tons, apartment, School House Lane, Philadelphia.

450 tons, approximate, Cancer Research building, Columbia-Presbyterian Medical Center, 168th St., New York; bids opened May 11; Voorhees, Walker, Foley & Smith, architects and engineers, 101 Park Ave., that city.

300 tons, Board of Transportation viaduct, 180th St., New York; bids May 20.

250 tons, addition, Newton Memorial Hospital, Newton, N. J.; bids May 24.

180 tons, bridge reconstruction, Pennsylvania railroad, Gillitzin, Pa.

100 tons or more, steel frame addition to warehouse A. M. Castle & Co., Seattle; bids in May 10.

100 tons or more, two 200-ton gantry cranes for McNary dam, Columbia river; Judson-Pacific-Murphy Corp., Emeryville, Cal., low to U. S. engineer, Walla Walla, Wash., $459,830.

100 tons, Alaska native hospital, Anchorage; bids in.

Unstated, 72-inch ring seat gate and accessories, for Coulee power plant, also transformer transfer car for Fort Peck; bids to Bureau of Reclamation, Denver, June 7.

Unstated tonnage, hospital, Gouveneur, St. Lawrence county, New York; bids opened May 14.

Unstated tonnage, flight research hangar, Langley Field, Langley, Va.; bids May 25.

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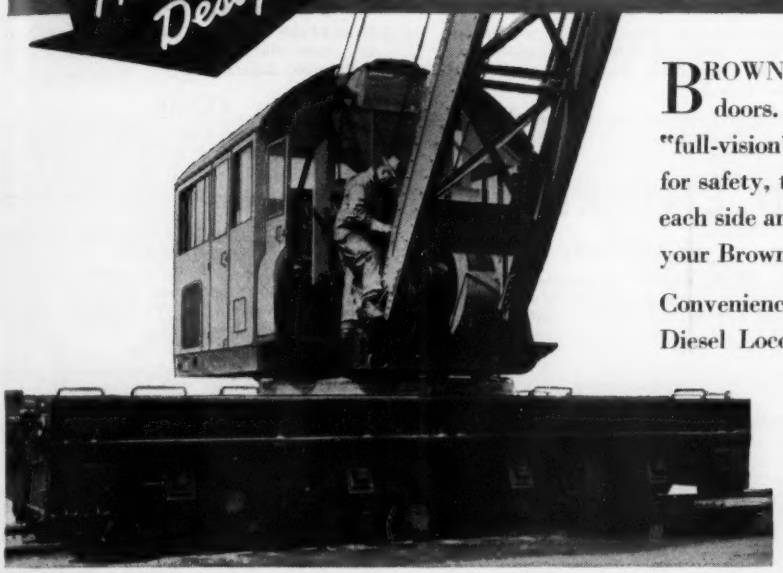

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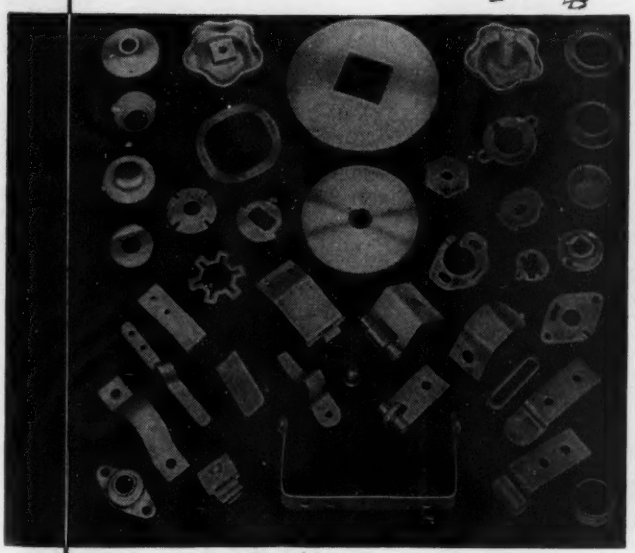

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RAILS, CARS . . .

RAILROAD CARS PENDING

Detroit, 106 trolley cars; St. Louis Car Co., St. Louis, low bidder.

New Jersey, Indiana & Illinois, 50 fifty-ton automobile box cars; bids asked.

REINFORCING BARS . . .

REINFORCING BARS PLACED

715 tons, outside utilities, Ladd Field, Alaska, to Bethlehem Pacific Steel Corp., Seattle; B. & M. Construction Co., general contractor.

650 tons, new warehouse, Kimberly-Clark Corp., Niagara Falls, N. Y., to Bethlehem Steel Co.; Wright & Kremers Co., general contractor.

150 tons, bridge and power house addition, Alaskan projects, to Bethlehem Pacific Coast Steel Corp., Seattle.

100 tons, Washington state highway project, to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

100 tons, relocation 2½ miles railroad, Meridian dam project, Oregon state; bids to U. S. Engineer, Portland, Oreg., about May 16.

100 tons, including shapes and miscellaneous, repairs to Kechelus dam, Washington state; bids to Bureau of Reclamation, Yakima, Wash., June 1.

100 tons, Washington state highway work; bids in at Olympia.

CONSTRUCTION AND ENTERPRISE

ALABAMA

FLORENCE, ALA.—City has selected Barnard & Burk, consulting engineer, Triad Bldg., to prepare plans and specifications for natural gas system; estimated cost $1 million.

CALIFORNIA

ARCADIA, CALIF.—Bekins Van & Storage Co., 1335 S. Figueroa St., Los Angeles, will build a $200,000 warehouse, Huntington Dr.; C. Deuel and G. E. Smith, 3806 Beverly Blvd., Los Angeles, consulting engineer.

SAN LEANDRO, CALIF. — General Foods Corp., 775 Terminal, Los Angeles, has awarded a $1 million contract to Swinerton & Walberg, 225 Bush St., San Francisco, for construction of a manufacturing plant; H. J. Brunner, 612 Sharon Blvd., San Francisco, engineer.

TORRANCE, CALIF.—Pittsburgh Plate Glass Co., 7412 Maie Ave., Los Angeles, has received a $862,476 general contract from MacIsaac & Meuke, 3440 E. 22nd St., Los Angeles, for construction of a plant.

COLORADO

DENVER—Western Electric Co. Inc., 195 Broadway, New York, has awarded a $2 million contract to Swinerton & Walberg, 3223 E. 46th Ave., for construction of a warehouse.

DENVER—Denver Cinder Tile Inc., 1155 W. Fifth Ave., will build a $400,000 cinder-block manufacturing plant between South Clay and South Federal Bldg., north of Englewood Speedway.

GEORGIA

ALBANY, GA.—Dixie Leather Corp., c/o Graton & Knight Co., 356 Franklin St., Worcester, Mass., will build a $1 million tannery.

ILLINOIS

HENNEPIN, ILL.—Illinois Power Co., 284 E. Simmons Sta., Galesburg, Ill., will build a $10 million power plant.

ILLINOIS-INDIANA-OHIO — Ohio Oil Co., Findlay, O., will spend $10 million in replacement and rehabilitation of a pipeline between Wood River, Ill., and Lima, O.

LINCOLNWOOD, ILL.—Ditto Inc., 2243 W. Harrison St., will build a $1.6 million factory; plans by Battey & Childs, 231 S. LaSalle St., Chicago.

INDIANA

HAMMOND, IND.—Rand-McNally & Co., 601 Conkey St., will build a $800,000 plant.

KANSAS

DODGE CITY, KANS.—Colorado Milling & Elevator Co., Equitable Bldg., Denver, will build a $500,000 grain elevator.

MINNESOTA

ST. PAUL, MINN.—Deluxe Check Printers Inc., 2531 University Ave., will build a $100,000 plant; Slifer & Cone, 441 Endicott Bldg., architect.

MISSISSIPPI

YAZOO CITY, MISS.—Mississippi Chemical Corp., c/o contractor, has awarded a $1 million contract to Girdler Corp., 224 E. Broadway, Louisville, for construction of a plant.

MISSOURI

ROBERTSON, MO.—General Motors Corp.'s Electro-Motive Division, through Argonaut Realty Division, 308 General Motors Research Bldg., Detroit, received bids May 10 on the construction of a service and repair building to be erected on Brown Rd. east of Lindbergh Blvd., St. Louis county, Mo., in the general vicinity of Lambert-St. Louis municipal airport and adjacent to the Wabash Railway tracks.

ST. LOUIS—Republic Bag Co., 1538 Blair Ave., will build a $200,000 warehouse, on Papin St. west of Ohio Ave.

NEW MEXICO

LOVINGTON, N. MEX.—Lea County Electric Co-operative Inc. will build a $1,250,000 power plant; Continental Engineers, 1310 Avenue Q, Lubbock, Tex., engineer and architect.

OHIO

CLEVELAND—Federal Foundry Supply Co., 4600 E. 71st St., is expanding its plant with construction of a building addition.

COLUMBUS, O.—Ohio Fuel Gas Co., 99 N. Front St., is replacing pipeline from Crawford compressor station on Route 33 at Sugar Grove to Columbus; from Columbus to Treat compressor station near Utica; and from Mt. Gilead to north of Galion; own forces. Estimated cost $4,167,000.

MANSFIELD, O.—Non-Ferrous Perma Mold Inc. has been incorporated by John A. Mintz, 254 Poplar St., to manufacture and deal in castings of all kinds.

MANSFIELD, O.—Mansfield *New Journal* will build a $500,000 plant, W. Fourth and Mulbery Sts. between Weldon and W. Temple Sts.; plans by Charles W. Conklin, Farmers Bank Bldg.; Vincent Eaton, Caxton Bldg., Cleveland, heating engineer; Paul C. Mehnert, 2232 Cummington Rd., Cleveland, electrical engineer.

OREGON

PORTLAND, OREG.—Ross B. Hammond Co. is low $1,761,300 for construction of local branch Federal Reserve bank.

PORTLAND, OREG.—General Petroleum Co. will build a $200,000 project involving loading rack, three islands and steel canopy at local terminals.

PORTLAND, OREG.—O. W. Ingle has been awarded a $150,000 contract for a district warehouse at NE 13th and Lombard Place, to be leased to Sunshine Biscuit Co.

PENNSYLVANIA

PHILADELPHIA—Armour & Co., 917 Noble St., will build a $250,000 packing plant.

PITTSBURGH—Construction has begun on a new building to house the Westinghouse Educational Center, to be located on Brinton Rd. The structure will face Ardmore Blvd. interchange of the new Penn-Lincoln Parkway.

WEST MIFFLIN, PA.—Westinghouse Electric Corp., Union Bank Bldg., Pittsburgh, will build a $1 million power plant; plans by Hunting, Larsen & Dunnells, 1150 Century Bldg., Pittsburgh.

SOUTH CAROLINA

WINNSBORO, S. C.—United States Rubber Co., 1230 Sixth Ave., New York, will build a $250,000 laboratory.

TEXAS

DALLAS—Homelite Corp., 3400 Ross Ave., will build a $100,000 plant, 167 Leslie St.

HOUSTON—Dalton Burns & Associates will build a $110,000 steel drum reconditioning plant.

HOUSTON—National Steel Co., 1901 Franklin St., will build a $750,000 plant, and a $500,000 warehouse; C. J. Kelin, 1303 Austin St., engineer, and Engineering Dept. of Weirton Steel Co., Weirton, W. Va., engineer.

MIDLAND, TEX.—Pittsburgh Plate Glass Co., c/o T. Jackson, second unit of Santa Fe Bldg., Dallas, will build a $150,000 plant; plans by Walter W. Ahlschlager, 212 S. St. Paul St.

PORT ARTHUR, TEX.—Jones & Laughlin Steel Corp. will spend $125,000 in modernizing and expanding its steel barrel plant.

WICHITA FALLS, TEX.—Panhandle Refining Co. will spend $1 million in expansion.

WASHINGTON

ANACORTES, WASH.—Skagit County Public Utility District, Mount Vernon, Wash., will build a $3 million steam plant; Harza Engineering Co., 400 W. Madison St., Chicago, consulting engineer.

CONCRETE, WASH.—Skagit County Public Utility District, Mount Vernon, Wash., will spend $5 million on dam transmission lines and plant on Illabot Creek near Concrete; transmission lines and substations, $1,250,000, Skagit county. Harza Engineering Co., 400 W. Madison St., Chicago, consulting engineer.

SEATTLE—City, County-City Bldg., will build three 100,000 kva generators for Ross Dam power plant, $3 million; E. R. Hoffman, city light superintendent.

SEATTLE—Austin Co. is completing plans for a $150,000 steel fabricating plant at 3820 Duwamish Ave. for Puget Sound Sheet Metal Works.

TACOMA, WASH.—Bond Steel & Welding Co. is constructing a plant at 2430 E. 11th St.

CANADA

RED DEER, ALTA.—Alberta Pulp Mills Ltd. will build a $10 million pulp mill; Cellulose Engineers Ltd., 71 Columbia St., Seattle, engineer.

BARRIE, ONT.—Lufkin Rule Corp., Saginaw, Mich., will build a $100,000 factory; plans by G. S. Adamson, 906 Yonge St., Toronto, Ont.

LONDON, ONT.—Eaton Wilson Rich Co., Windsor, Ont., will build a $100,000 plant, Highbury Ave.

MIMICO, ONT.—Stone Straw Corp. of Canada, 575 Adelaide St. W., Toronto, Ont., will build a $150,000 factory, Lake Shore Rd. near Mimico Creek; plans by A. J. Heeney, 73 Bonstead Ave., Toronto.

OTTAWA, ONT.—Hydro Electric Power Commission of Ontario, University Ave., Toronto, Ont., will build a $10 million dam and generating plant, Chandiere Falls, Ottawa river.

BEAUPORT, QUE.—Joseph Grenier Co. Ltd. will build a $150,000 factory.

DORVAL, QUE.—F. P. Lalonde Ltd., 366 Inspector St., will build a plant; plans by A. L. Perry, 1502 St. Catherine St. W., Montreal, Que.

ROUYN, QUE.—New Rouyn Merger Mines Ltd., 603 Royal Bank Bldg., Toronto, Ont., will build a $136,000 mill.